



PRINCIPAL CONTENTS

Mallee Wheat-growing Experiments

Meadow Competition

Crop and Fallow Competitions

Improvement of Poultry Flocks

Artificial Fertilizers registered for 1929

BRUNNING'S

SEEDS

7B TRADE MARK 7B TRADE MARK

BEST BY TEST !!!

Sow BRUNNING'S Genuine, English-grown, Broad-leaved

DWARF ESSEX RAPE



Which is valuable for pasturing sheep, cattle, and pigs, for green manuring and for oil. It makes excellent green manure when ploughed under, and can also be cut and fed if required instead of being grazed. Adds nitrogen to the soil, and cleanses the land of weeds.

WHITE MUSTARD SEED

When sowing RAPE, it is advisable to include $\frac{1}{2}$ lb. of WHITE MUSTARD SEED per acre, as a preventative of blowing and scouring.

Brunning's Genuine "Mesgawi" BERSEEM CLOVER

Grown to special contract each year, and saved from specially selected fields.

ANNUAL WINTER FODDER CROPS

Perhaps better known as Four Purpose Crops, on account of their four definite uses.

Write for further particulars and quotations, post free

BRUNNINGS

F. H. BRUNNING Pty. Ltd.

57 Elizabeth Street, MELBOURNE, C. 1

[*Supplement to The Journal of the Department of Agriculture, Victoria,
February, 1930.*]



THE JOURNAL
OF THE
DEPARTMENT OF AGRICULTURE
OF
VICTORIA,
AUSTRALIA.

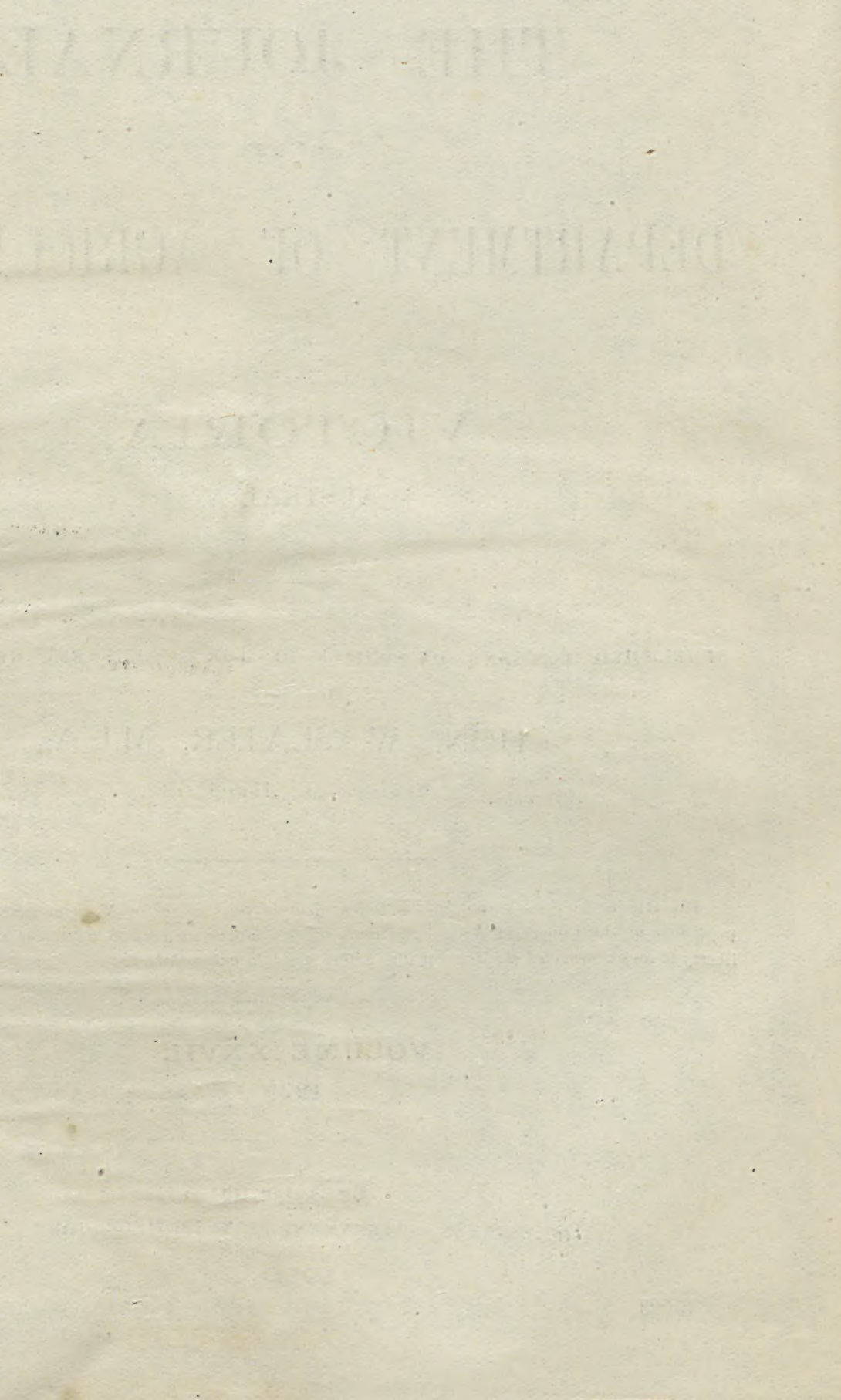
PUBLISHED FOR AND ON BEHALF OF THE GOVERNMENT BY DIRECTION
OF THE

HON. W. SLATER, M.L.A.,
Minister for Agriculture.

The articles in the Journal of the Department of Agriculture of Victoria are protected by the provisions of the Copyright Act. Proprietors of newspapers wishing to republish any matter are at liberty to do so, *provided the Journal and author are both acknowledged.*

VOLUME XXVII.
1929.

By Authority:
H. J. GREEN, GOVERNMENT PRINTER, MELBOURNE.
1930.



THE JOURNAL OF THE DEPARTMENT OF AGRICULTURE, VICTORIA.

VOLUME XXVII. Parts 1-12.

INDEX.

	Page		Page
Actinomycosis	240	Bartels, L. C. (and Ryland, E.)—	
Adam, D. B.—		Tongala Irrigated Farm Com-	
Notes on Plant Diseases		petition	272
(Rhizoctonia)	670	Beans—Manures for	124
Agricultural Research in United		Bees—	
Kingdom	665	The Frame Hive	287
Almonds—		Beulah Crop and Fallow Com-	
Culture of	286	petition	120
Stocks for	214	Blackleg in Cattle	140
American New Farm Relief Mea-		Black Disease in Sheep	141
sures	695	Bloat or Hoven—Avoiding	
<i>Aphelinus Mali</i> and Woolly		Danger of	553
Aphis	717	Blowfly, Sheep	553
<i>Aphelinus Mali</i> , why it will not		Book Notes	11, 483, 581, 665
become a pest	717	Bot, Nasal	490
Apples—		Bowman, N. A.—	
Codling Moth	533, 672, 717	Care of Ewes at Lambing	
Irrigation—Effect of	578	Time	281
Packing—Prevention of Bruis-		Brake, J.—	
ing	148	Goulburn Valley Inter-District	
Stocks	211	Crop Competition	117
Suggestions for Packing	635	Merrinee-Redcliffs Fallow, &c.,	
Apricot Scab	235	Competition	35
Apricots—		Swan Hill Crop, &c., Com-	
Stocks for	214	petition, 1929	730
Sulphuring of	607	Brooders—Making of	437
Apricots, Dried—Removal of Ex-		Brown Rot of Stone Fruits	719
cess Sulphur Dioxide	480	Budding of Fruit Trees	292
Artificial Fertilizers. (See Fer-		Bull—Selection of	519
tilizers.)		Butter Factories in Victoria—	
Avian Tuberculosis	422	Amalgamation not Always De-	
Ayrshire, The	726	sirable	131
Bacon—Production in Russia	64	Are There Too Many?	129
Balanitis of Wethers	679	Butter Situation in Canada	669
Bartels, L. C.—		Calf Clubs—	
Economic Use of Irrigation		Corryong	589
Water	661	Pomborneit	419
Elmore Crop and Fallow Com-		Walwa	589
petition	24	Calves—How they Should be	
Rochester Irrigated Dairy		Reared	523
Farm Competition	415	Carwarp Wheat Growing Experi-	
Bartels, L. C. (and Roy, J.,		ments	1
and Ryland, E.)—		Castella, F. de—	
Cohuna Irrigated Farm Com-		Champagne	666
petition	465	Modern Wine-Making Methods	651
		Seasonal Viticulture	9

	Page		Page
Castella, F. de (and French, C).—		Crop and Fallow Competitions—	
Mealy Bug	427	Baring	221
Cattle Diseases. (See Stock Diseases.)		Beulah	120
Champagne	666	Dimboola	155
Chemistry in Agriculture ...	566	Elmore	24
Cherry Slug	720	Galah North	33
Cherries—Stocks for	214	Kaniva	98
Chickens—Mixture for	439	Merrinee-Redcliffs Line ...	35
Childers Potato Manurial Trials	602	Murrayville	18
Citrus—		Nhill	106
Cincturing Navel Orange Trees	599	North-West Mallee	27, 221
Red Scale on	596	Ouyen	32
Rind Markings of	593	Patchewollock	221
Clinton, H. F.—		Swan Hill	730
Poultry Tick	245	Ultima	165
Clinton, H. F. (and Pederick, W. O).—		Underbool	21
Burley Egg-laying Competitions, 1928-29)—Report on ...	331	Walpeup	29
Clubs—		Wangaratta	94
Calf	419, 589	Wycheproof	151
Young Farmers	495	Crowe, R.—	
Cock, S. A.—		Butter Factories in Victoria—	
Cincturing Navel Orange Trees	599	Are There Too Many? ...	129
Red Scale on Citrus Trees ...	596	Dairy Products—Reduction in	
Rind Markings of Citrus		Cost of	705
Fruits	593	Production More Important	
Tomato Culture	495	than Question of Markets ...	705
Codling Moth—		Trade with the East	228
Control of	533	Dairy Herds—	
Control of, Cost of Spraying	672	Building Up of	513
Experiments in Extermination	717	Breeds—Characteristics of ...	724
Cohuna Irrigated Farm Com-		Dairy Supervisor—Work of ...	257
petition	465	Dairying Industry—	
Contagious Abortion of Cattle ...	71	Production—How Cost Can be	
Cool Storage of Fruit	577	Reduced	707
Corryong Calf Club	589	Reduction in Cost of Produc-	
Cows—		tion more Important than	
Ayrshire, The	726	Question of Markets	705
Breeds, Dairy, Characteristics		South Gippsland	641
of	724	Switzerland	181
Contagious Abortion	71	Davey, H. W.—	
Dairy Breeds—Characteristics		Current Orchard Work	717
of	724	Orchard Hygiene	433
Dexter-Kerry, The	730	Stock for Fruit Trees	211
Essential Points of	517	Denmark and Victoria—Number	
Feeding Methods	647	of Butter Factories—a Com-	
Friesian, The	727	parison	130
Guernsey, The	728	Dexter-Kerry, The	729, 730
Illawarra	729	Dimboola Crop and Fallow Com-	
Jersey, The	725	petition	155
Mastitis	267	Diseases of Stock—	
Production Character, De-		See Stock Diseases and Sheep	
velopment of	644	Diseases.	
Red Poll, The	727	Dried Apricots—Removal of Ex-	
Shorthorn, The	724	cess Sulphur-dioxide	480
Type or Results	521	Ducks—	
Which is Best Breed	523	Details of Results, 1928-29	
Cream—		Competition	366
Keeping it Fresh	260	Details of Results, Winter	
Ropiness in	569	Test, 1929	549
Crop Competitions—		Fattening of	714
Goulburn Valley Inter-District	117	England, J. S.—	
Rutherglen	216	The Farm Hive	287
		Eggs—Marketing of	184
		Elmore Crop and Fallow Com-	
		petition	24
		English Farming	689

	Page		Page
Entomology—		Frost—Effect on Wheat at Dim-	
<i>Aphelinus Mali</i> and Woolly		boola	156
Aphis	717	Fruit Packing—	
Brown Rot of Stone Fruits ...	719	Apples—Prevention of Bruis-	
Cherry Slug	720	ing	148
Codling Moth—Control of		Passion Fruit	409, 470
533, 672, 717		Peaches	721
Maroga Moth of Stone Fruits, ...	718	Fruit Storage	577
Mealy Bug	427	Fruit Trees—	
Peach Aphis	719	Budding	292, 460
Red Scale on Citrus Trees ...	591	Cultivation, Surface	720
Root Borer	719	Grafting	297, 396
Woolly Aphis and <i>Aphelinus</i>		Grafting, Bridge	405
<i>Mali</i>	717	Inarching	405
Ewes—Care of at Lambing-time	281	Plums—if Much Gum Present	
Fallow and Crop Competitions—		Shoots Not to be Removed	720
Baring	221	Preservation of	460
Beulah	120	Removing Dead Limbs	435, 462
Dimboola	155	Shoots—Removal of	720
Elmore	24	Top-grafted Trees—Care of ...	720
Galah North	33	Fruit Tree Diseases—	
Kaniva	98	<i>Aphelinus</i> and Woolly Aphis	717
Merrinee-Redcliffs Line	35	Apricot Scab or Shot-hole ...	235
Murrayville	18	Brown Rot of Stone Fruits ...	719
Nhill	106	Cherry Slug	720
North-West Mallee	27, 221	Codling Moth, Control of	
Ouyen	32	533, 672, 717	
Patchewollock	221	Maroga Moth	718
Swan Hill	730	Peach Aphis	719
Ultima	165	Root Borer	719
Underbool	21	Fruit Tree Stocks—	
Walpeup	29	Almonds	214
Wangaratta	94	Apples	211
Wycheproof	151	Apricots	214
Farm Relief Measure (America)	695	Cherries	214
Farming in England	689	Peaches	213
Fauna, Wild, Effect of Reduc-		Pears	212
tion of Shelter	681	Plums	213
Fertilizers, Artificial—		Walnuts	215
List of those Registered for		Fungicides and Insecticides ...	566
1929	42	Galah Fallow and Crop Com-	
Relation Between Flag Smut		petition	33
and Manurial Treatment ...	321	Geese—Fattening of	714
Unit Values	43	Gill, A. J.—	
Fish, S.—		Conservation of Fodder on	
Apricot Scab or Shot-hole ...	235	Dairy Farms	582
Flag Smut—Relation to Manurial		Dairy Breeds and their	
Treatment	321	Characteristics	724
Fluke in Sheep	144	Pig Feeding Tests	617
Fodder, Conservation of 197, 582,	585	Standard Herd Records—Re-	
Fodder Crops at Mirboo North	649	port for 1928-29	513
„ Best	583	Young Farmers' Clubs	495
„ Summer	550	Gippsland Meadow Competition	15
Foot-rot of Sheep	262	Gippsland South—Dairying in ...	641
Forster, H. C. (and Vasey, A.		Glassy End of Potatoes	449
J.)—		Goulburn Valley Inter-District	
Experimental Error of Field		Crop Competition	117
Trials in Australia	385	Grafting of Fruit Trees 297, 396	
Relation Between Flag Smut		Grafting, Bridge, of Fruit Trees	405
Infection and Manurial		Grafting Wax—Making of ...	396
Treatment	321	Grasses. (See also Pastures)—	
French, C. (and Castella,		Cocksfoot	17
F. de)—		Cow Grass	18
Mealy Bug	427	Meadow Competition, Gipps-	
Friesian, The	727	land	15
		Perennial Rye Grass	18
		Subterranean Clover	18
		White Clover	18

	Page		Page
Guernsey, The	728	Kenyon, A. S.—	
Hackwell, A. B.—		Water Supply for Farms—	
Kaniva Fallow and Crop Com-		Ironclad or Artificial Catch-	
petition	98	ments	86
North-West Mallee Fallow and		Kerr, J. M.—	
Crop Competition	27, 221	Work of the Dairy Supervisor	257
Harrison, J. E.—		Knight, Miss A.—	
Meadow Competition, Gipps-		Home Utilization of Fruits in	
land	15	Season	39
Hay, Oaten and Wheat—Food		Koo-wee-rup Rainfall, 1922-28 ...	459
Value of	583	Krone, B.—	
Hay, Meadow—Value of	584	Apple Packing	148
Herd Testing. (See also Stan-		Grading and Packing of	
dard Herd Test)—		Peaches	721
Value of	193	Harvesting and Packing	
Yinnar—Results at	153	Passion Fruit	407, 471
Hide and Skin Industry	734	Lambing Time—Care of Ewes ...	281
Hive, Frame	287	Lambs—	
Horse Ailments—		Hand-feeding	283
Nail in Foot	138	Marking	283
Strained Tendon	137	Lerew, W. M.—	
Wounds	138	Tuberculosis in Stock	242
Horse Breedings Act Regulations	311	Levick, G. T.—	
Hoven or Bloat—Avoiding		Control of Codling Moth	533
Damage of	553	Lice—Sheep	609
Hyland, P.—		Licks—	
Pomborneit Calf Club	419	Mineral Composition of	231
Illawarra, The	729	Mixture for	234
Inarching of Fruit Trees	405	(Sheep), Mixture for	282, 489
Insecticides and Fungicides ...	566	Lindenow—Maize Tests at	622
Ironclad Method of Water Catch-		Lip and Leg Ulceration of Sheep	425
ment	86	Liver Fluke Disease	144
Irrigated Dairy Farm Competi-		Lucerne—	
tion, Rochester	415	Should it be Grown when Irri-	
Irrigated Farm Competition—		gation Uncertain	664
Cohuna	465	Stock Food—Value as	584
Tongala	272	Summer Fodder Crop	550
Irrigation—		Lucerne Competition, Tongala ...	278
Effect on Apples	578	Lucerne Top Dressing Tests—	
Excessive Watering to be		Cohuna	632
Guarded Against	662	Swan Hill	631
Practices	661	Tongala	632
Quantity to Apply	663	Lumpy Jaw	240
Water—Economic Use of	661	Maize—Food (Stock) Value of ...	583
Jersey, The	725	Maize Experiments—	
Jephson's Farm, Stacey's Bridge	588	Lindenow	625
Jewell, W. R.—		Orbost	622
Chemistry in Agriculture	566	Mallee Wheat Growing Experi-	
Composition of Mineral Licks	231	ments	1
Removal of Excess Carbon-		Maroga Moth of Stone Fruits ...	718
dioxide from Over-sulphated		Mastitis of Dairy Cows	267
Dried Apricots	480	Meadow Competition, Trafalgar	15
Jewell, W. R. (and Simpson,		Mealy Bug	427
Mary)—		Merrinec-Redcliffs Fallow, &c.,	
Milling and Baking Experi-		Competition	35
ments with Crossbred		Millbrook Potato Manurial Trial	708
Wheats	65	Miller, W. B.—	
Johnstone, R. N.—		Dimboola Crop, &c., Competi-	
Avian Tuberculosis	422	tion	155
Common Ailments of Stock ...	137	Nhill Crop, &c., Competition	106
Jones, Luke—Farm of	80	Wangaratta Crop, &c., Com-	
Kalimna Bean Experiments ...	124	petition	94
Kaniva Fallow and Crop Com-		Rutherglen Crop Competition	216
petition	98	Milk Fever	77
Kendall, E. A.—		Millet as Summer Fodder Crop	551
Registration of Stallions—An-			
nual Report	303		

	Page		Page
Milling Experiments with Cross-bred Wheats	65	Paterson Scheme—	
Mineral Licks—		Advantage to Dairymen	707
Composition of	231	Pears—	
Mixture for	234, 282	Stocks for	213
Minerals for Stock—		Storage of	579
Form in which to supply	233, 648	Peach Aphid	719
Functions of	231	Peaches—	
Mountjoy, S. A.—		Stocks for	213
Actinomycosis	240	Grading	721
Murrayville Crop and Fallow		Harvesting	721
Competition	18	Packing	722
Musk Potato Manurial Trials ...	571	Pederick, W. O.—	
McKenzie, R. T.—		Home-made Brooders	437
Ropiness in Cream	569	Pederick, W. O. (and Clinton,	
Nasal Bot	490	H. F.)—	
Nhill Crop, &c., Competition ...	106	Burnley Egg-Laying Competi-	
Nut Culture	285	tion, 1928-29—Report on ...	331
Oat Trials—		Penman, F.—	
Strathkellar	442	Glassy End of Potatoes	449
Western District	248, 442	Pescott, R. T. M.—	
Winchelsea	248	Spraying Costs in Codling	
Oranges—		Moth Control	672
Cincturing Experiments	599	Pigs—	
Red Scale Experiments	596	Ear-marking Methods	618
Rind Markings of	593	Feeding Tests at Moriac	617
Orbost—Maise Experiments at	622	Mixed Food and Free Choice	
Orchards. (See also Fruit		Test	620
Trees.)		Recording of by Card System	619
Cleaning up Headlands	435	Plant Diseases—	
Cultivation, Surface	720	Glassy End of Potatoes	449
Dead Limbs—Removing of	435, 462	Rhizoctonia Disease of Pota-	
Destruction of Useless Fruit	434	toes	601, 670
Hygiene	433	Plums—	
Leaves—Burying of	436	Gumming of	720
Shoots, Young, Removal of ...	720	Stocks for	213
Work for December	717	Pomorneit Calf Club	419
Ouyen Fallow and Crop Com-		Potatoes—	
petition	32	Competitions—	
Passion Fruit—		Korumburra	441
Grading	408	Portland	441
Harvesting	407	Romsey	439
Packing	409, 470	Diseases—	
Pasture (see also Grasses)—		Collar Stem Rot	601
Dairy Farmers' Main Crop ...	586	Glassy End	449
Value of	586	Rhizoctonia solani	601, 670
Pasture Competitions—		Manurial Trials—	
Tongala	274	Catani	674
Trafalgar	15	Childers	602
Pasture Mixtures—		Fish Creek	675
Tongala	274	Illowa	677
Trafalgar	15	Koroit	677
Yinnar	204, 205	Millbrook	708
Pasture Top-Dressing—		Musk	571
Bannockburn	250	Trentham East	676
Dollar	81	Warragul	605
Korumburra	249	Wheat-sheaf	679
Kyneton	8	Poultry—	
Moorooduc	125	Brooders—Home-made	437
On Light Lands	250	Burnley Egg-laying Competi-	
Warncourt	266	tion, 1928-29—Report	331
Yarram	586	Chickens—Mixture for	439
		Diseases—	
		Tick	245
		Tuberculosis	422

	Page		Page
Poultry—continued.		Sheep—	
Ducks—Fattening of ...	712	Care at Lambing Time ...	281
Eggs—		Dipping—Necessity for ...	612
Grading in Other Countries ...	185	Lick for ...	282
Marketing ...	184	Sheep Diseases—	
Fattening of ...	712	Balanitis ...	679
Fowl-houses—Method of disinfecting ...	424	Bot, Nasal ...	490
Geese—Fattening of ...	714	Black Disease ...	141
Hoppers—		Blowfly ...	553
Making ...	136	Fluke ...	144
Use ...	183	Foot-rot ...	262
Improvement of Flocks ...	12	Lice ...	609
Introduction into Australia—		Lip and Leg Disease ...	425
Restrictions on ...	716	Lip and Leg Ulceration ...	425
Marketing of ...	715	Liver Fluke ...	144
Preparing for Market ...	711	Nasal Bot ...	490
Turkeys—Crooked-breasted ...	715	Pizzle Disease of Wethers ...	679
Turkeys—Fattening of ...	715	Swelled Head of Rams ...	679
Winter Egg-laying Test ...	542	Tick ...	609
Production, Dairy, How cost can be reduced ...	707	Worms ...	484
Production, Reduction in cost more important than question of markets ...	705	Shelter and Wild Fauna ...	681
Rainbow Wheat-growing Experiments ...	7	Shew, W. D.—	
Rams—Swelled Head in ...	679	Black Disease in Sheep in Australia ...	141
Ramsay, J. T.—		Diseases of Sheep ...	679
Potato Competitions ...	439	Liver Fluke Disease ...	144
Potato Manurial Trials ...	571, 601, 674, 708	Shorthorn, the ...	724
Red Poll, The ...	727	Shot-hole or Apricot Scab ...	235
Rhizoctonia Disease of Potatoes ...	601, 670	Silage Crops ...	584
Rochester Irrigated Dairy Farm Competition ...	415	Simpson, Mary (and Jewell, W. R.)—	
Root Borer ...	719	Milling and Baking Experiments with Crossbred Wheats ...	65
Roy, J. (and Bartels, L. C., and Ryland, E. A.)—		Skin and Hide Industry ...	734
Cohuna Irrigated Farm competition ...	465	Smith Bros., Mirboo North, Farm of ...	641
Rugg, W. C.—		Sorghum—Care required to avoid poisoning with ...	552
Improvement of Poultry Flocks ...	12	South Gippsland—Farming in ...	80, 641
Marketing of Eggs ...	184	Squab Breeding Contest ...	491
Preparing Poultry for Market ...	711	Sprays—Poison ...	567
Use of Automatic Hoppers ...	133	Stallion Register, 1929-30 ...	500, 633, 686
Winter Egg-laying Test ...	542	Stallions, Registration of—Annual Report ...	303
Rutherglen Crop Competition ...	216	Stallion Parades, 1929—Time Table ...	306
Ryan, P.—		Standard Herd Test—	
Beulah Crop and Fallow Competition ...	120	Report for Quarter ended 31st December, 1928 ...	170
Summer Fodder Crops ...	550	Report for Quarter ended 30th March, 1929 ...	369
Ryland, E. (and Bartels, L. C.)—		Report for Year 1928-29 ...	513
Tongala Irrigated Farm Competition ...	272	Report for Quarter ended 30th September, 1929 ...	738
Ryland, E. (and Bartels, L. C., and Roy, J.)—		Graphs showing Average Yields for Years 1913-1929 ...	527
Cohuna Irrigated Farm Competition ...	465	Stock Diseases (see also Sheep Diseases)—	
Salisbury—Wheat-growing at ...	92	Abortion Disease ...	71
		Abortion, Infectious ...	71
		Actinomycosis ...	240
		Blackleg ...	141
		Bloat or Hoven—Avoiding danger of ...	553

	Page		Page
Stock Diseases— <i>continued</i> .		Underbool Crop and Fallow Competition	21
Calving Fever	77	Upper Murray District—Dairying in	589
Contagious Abortion	71	Vasey, A. J.—	
Hoven or Bloat—Avoiding		Wycheproof Crop and Fallow Competition	151
Danger of	553	Vasey, A. J. (and Forster, H. C.)—	
Introduction of — Guarding against	514	Experimental Error of Field Trials in Australia	385
Lumpy Jaw	240	Relation between Flag Smut Infection and Manurial Treatment	321
Mastitis	267	Viticulture—	
Milk Fever	77	Mealy Bug—A Potential Vine Pest	427
Tuberculosis	242	Planting and Reconstitution of Vineyards	316
Woody Tongue	240	Seasonal	9
Stock Licks—		Wine-making Methods	651
Functions of	231	Walker, Geo.—	
Ingredients of	233	Calf Clubs in Upper Murray District	589
Suggested Mixture for	234, 282	Walnuts—	
Stocks for Fruit Trees	211	Culture of	285
Strathkellar Oat Experiments	442	Stocks for	215
Straw—Value of as a Stock Food	585	Walpeup Wheat-growing Experiments	5
Subdivision of Farms—Advantages of	587	Wangaratta Crop, &c., Competitions	94
Sudan Grass as Summer Fodder Crop	552	Ward, J. M.—	
Swan Hill Crop, &c., Competition, 1929	730	Nut Culture	285
Swiss Dairying Industry	186	Budding, Grafting, and Inarching of Fruit Trees	290, 396, 460
Talbot, R. J. de Courcy—		Wardle, R. N.—	
Contagious Abortion of Cattle	71	Mastitis of Dairy Cows	267
Foot-rot of Sheep	262	Warragul Potato Manurial Trials	605
Lip and Leg Ulceration of Sheep	425	Water Supply for Farms	86
Milk Fever	77	Wheat—	
Thompson, R.—		Baking and Milling Experiments	65
Pasture—Dairy Farmer's Main Crop	586	Diseases—	
Tick, Poultry	245	Ball Smut — Prevention of	38, 121, 222
Tick, Sheep	609	Black Rust	222
Tindale, G. B.—		Flag Smut	222
Cool Storage of Fruit	557	Flag Smut Infection—Relation to Manurial Treatment	321
Tomatoes—		Take-all	222
Cultivation	629	Experiments—	
Manuring	629	Carwarp	1
Plants, Raising of	628	Rainbow	7
Pruning	631	Salisbury	92
Sowing Seed	627	Walpeup	5
Soils	629	Western District	163
Tongala Irrigated Farm Competition	272	Willaura	163
Top Dressing of Pastures (<i>see</i> Pastures).		Experimental Error in Field Trials	385
Trade with East—Possibilities of Development	228	F.A.Q., 1929 — Analysis of sample	498
Tuberculosis—			
Poultry	422		
Stock	242		
Turkeys—			
Crooked-breasted	715		
Fattening of	715		
Twentyman, R. L.—			
Murrayville Crop and Fallow Competition	18		
Ultima	165		
Underbool	21		
Ultima Crop and Fallow Competition	165		

	Page		Page
Wheat— <i>continued.</i>		Woolly Aphis and <i>Aphelinus Mali</i>	717
Frost—Effect of at Dimboola	156	Worms (Sheep)—	
Manurial Treatment and Flag Smut	321	Bronchial	487
Milling and Baking Experiments	65	Intestinal	484
Relation between Flag Smut Infection and Manurial Treatment	321	Lung	487
Replications of Experiments—		Stomach	484
Number desirable	393	Tape	486
World Statistics	698	Wycheproof Crop and Fallow Competition	151
Wine—		Yuill, W. J.—	
Champagne	666	A South Gippsland Farm	80
Methods of Making (Modern)	651	Success in Dairy Farming (South Gippsland)	641
		Value of Herd Testing—Seven Years' Work at Yinnar	193



THE JOURNAL

OF

THE DEPARTMENT OF AGRICULTURE,

VICTORIA, AUSTRALIA.

CONTENTS.—JANUARY, 1929.

	PAGE
Mallee Wheat-growing Experiments	1
Top-dressing Pastures—Results at Kyneton	8
Seasonal Viticulture <i>F. de Castella</i>	9
Book Note—"Scientific Principles of Plant Protection"	11
Improvement of Poultry Flocks	12
Meadow Competition—Held by Central Gippsland Agricultural &c. Society <i>J. E. Harrison, B.Ag.Sc.</i>	15
Murrayville Crop and Fallow Competition <i>R. L. Twentyman, B.Ag.Sc.</i>	18
Underbool Crop and Fallow Competition <i>R. L. Twentyman, B.Ag.Sc.</i>	21
Elmore Crop and Fallow Competition <i>L. C. Bartels, B.Ag.Sc.</i>	24
Fallow and Crop Competition in the North-west Mallee—	
Zone 3 <i>A. B. Hackwell, B.Ag.Sc.</i>	27
Zone 1 <i>J. Brake, B.Ag.Sc.</i>	35
Home Utilization of Fruits in Season <i>Miss A. Knight</i>	39
Artificial Fertilizers registered for 1929	42
The Elixir of Life	58
The Heating of Honey	59
Orchard and Garden Notes	60
Reminders for February	62
Bacon Production in Russia	64

COPYRIGHT PROVISIONS AND SUBSCRIPTION RATES.

The Articles in the Journal of the Department of Agriculture of Victoria are protected by the provisions of the Copyright Act. Proprietors of newspapers wishing to republish any matter are at liberty to do so, *provided the Journal and author are both acknowledged.*

The Journal is issued monthly. The subscription, which is payable in advance and includes postage, is 3s. per annum for the Commonwealth and New Zealand, and 5s. for the United Kingdom and Foreign Countries. Single copy, Threepence.

Subscriptions should be forwarded to the Director of Agriculture, Melbourne. A complete list of the various publications issued by the Department of Agriculture will be supplied by the latter.

Cyclone

METAL GATES and FENCES



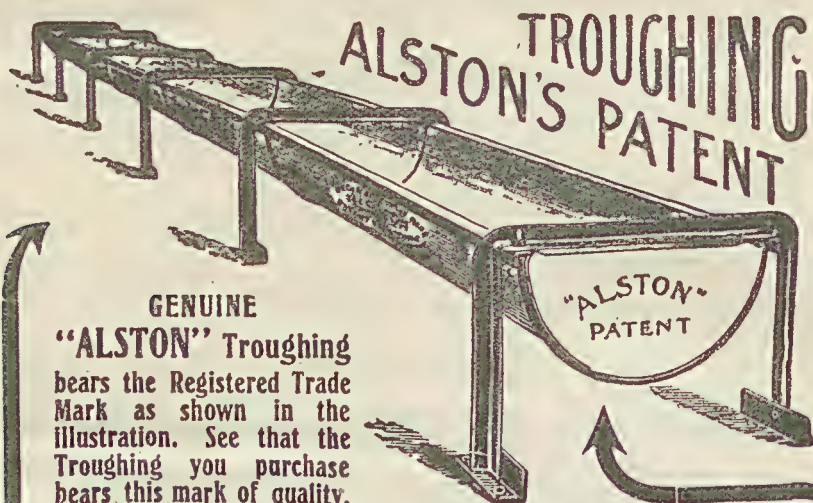
*The Red Tag
Trade Mark
is your guarantee.
Look out for it!*

ON economy alone you should decide on Cyclone fences and gates. Cheaper to erect than an ordinary wire fence, Cyclone is far more durable than any other type. Being made of galvanized wire throughout, Cyclone fences are unaffected by either weather or age.

Cyclone gates, too, are everlasting. Ask for prices and details—we will send you post free one of our beautifully illustrated catalogues. Let us know your requirements and we will quote a price.

CYCLONE FENCE & GATE Co. Pty. Ltd.

189-191 WILLIAM STREET — MELBOURNE
and at Sydney and Adelaide



**GENUINE
"ALSTON" Troughing**
bears the Registered Trade Mark as shown in the illustration. See that the Troughing you purchase bears this mark of quality.

Steel throughout. Put together with a wrench, no solder required. Cannot leak or pull apart because the Alston Patent Coupling makes a perfectly watertight joint without grooves to fracture the galvanising, while locking every section together as rigidly as a bridge.

The heavy Steel Angle Frame and heavily Galvanised Steel Sheets used, together with our Patent Coupling are points which make the ALSTON TROUGHING superior to all others.

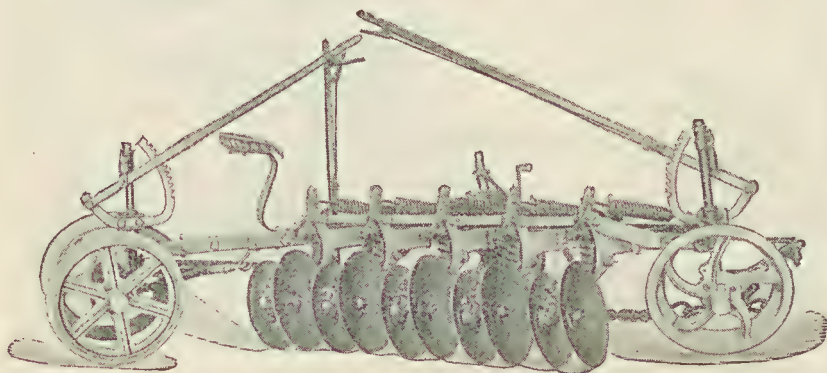
Send for Illustrated Leaflet.

JAMES ALSTON & SONS PTY. LTD., Queens Bridge, Melbourne.

Postal District 6.

The "SUNDERCUT"

Stump-Jump Disc Cultivating Plough



10 Disc Size cuts 5 feet
14 Disc Size cuts 7 feet

UNEQUALLED for SUMMER FALLOW PLOUGHING

Makes a splendid job—cultivating hard-set fallow or fallow covered with heavy weed growth, paddy-melon, stinkwort, thistles, &c. Does good work in virgin Mallee soils

The two discs mounted on each jump arm are alternately 20-inch and 18-inch diameter, SET WITH UNDERCUT. Both discs cut to the same depth, but the varying throw of the two diameters leaves the soil surface in that granular state wherein most benefit is derived from rainfall and atmospheric conditions.

Differential cog-jumping device allows of high jump without increase of draught.

Double rear wheels give fine control and may be angled to increase or decrease breast cut.

The "Sundercut" may be fitted with levers either for team or tractor pull

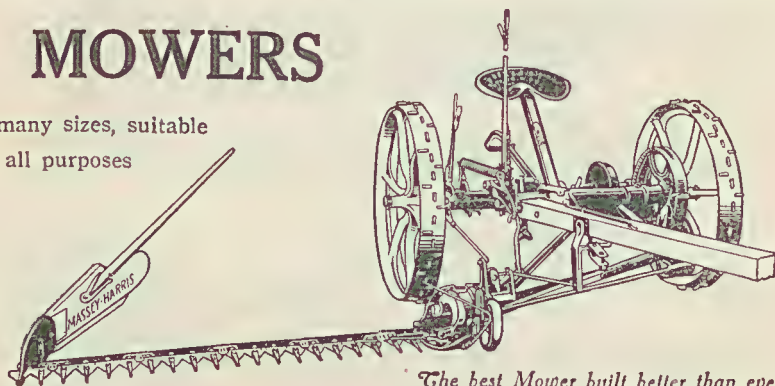
H. V. MCKAY PTY. LTD.

Sunshine Harvester Works, Sunshine

Showrooms - - - 664 Bourke Street West, MELBOURNE

Buy MASSEY-HARRIS—and British. MOWERS

of many sizes, suitable
for all purposes



The best Mower built better than ever.

One of the common faults of inferior mowers is cross-meshing of the bevel gears, due to improper alignment of shaft holes and bearings. Massey-Harris mowers are safeguarded from this possibility since their frames are reamed and faced on specially-built machines which do nothing but this work. These machines ream and face off six holes at a time, and are attended by inspectors who determine the accuracy of each machined portion before the frame is passed along to the next operation. Side Delivery and Pea Harvesting Attachments are available if required.

Folder describing each feature of the Mower and full particulars from Agent, or write direct to

MASSEY-HARRIS Co. Ltd. - 570-576 Bourke St., Melbourne

Branches: SYDNEY, BRISBANE, ADELAIDE, PERTH, CHRISTCHURCH (N.Z.)

LYSAGHT'S — ORB — CORRUGATED ROOFING IRON

*Obtainable from all leading Storekeepers and
Timber Merchants.*

This well-known brand has held an established reputation for more than 70 years, and is the recognized standard for Quality in a perfectly galvanized sheet.

The "Banyule" Jersey Stud

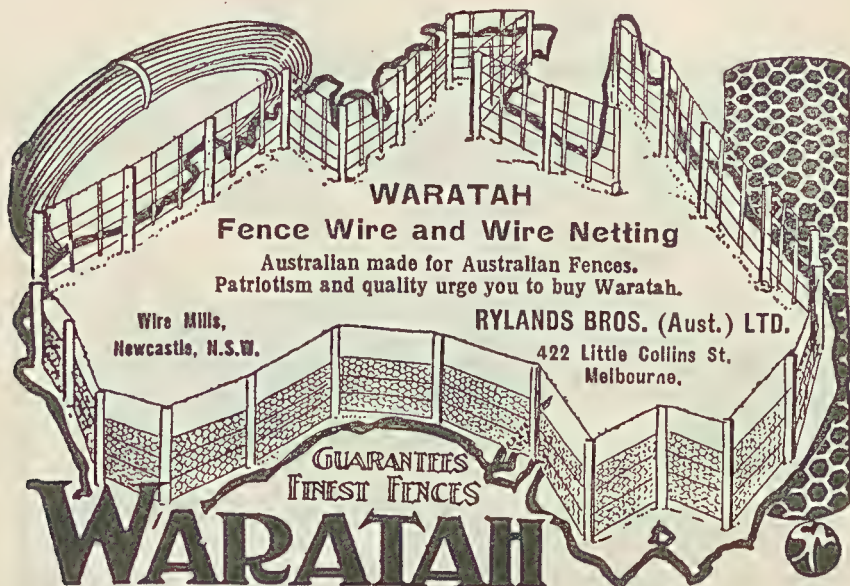
HEIDELBERG, VICTORIA

8 miles from G.P.O.

**ALL GOVERNMENT TESTED
YOUNG STOCK FOR SALE**

Inspection and Correspondence Welcomed.

C. GORDON LYON



WARATAH
Fence Wire and Wire Netting

Australian made for Australian Fences.
Patriotism and quality urge you to buy Waratah.

Wire Mills,
Newcastle, N.S.W.

RYLANDS BROS. (Aust.) LTD.
422 Little Collins St.
Melbourne.

GUARANTEES
FINEST FENCES

WARATAH

THE SMITH STUMP-PULLER



The machine will pull the stumps quicker than holes can be made for dynamite.

Burmis, Alta, Canada.

Gentlemen,
The Smith Stump Puller I bought last year is a dandy, I must say. I can pull stumps quicker than a man can make holes for dynamite. I expect you have had some orders from here, as those that saw it work wanted the catalogue and I gave away all I had. I would like you to send me another.

HUGH CAMERON.

Catalogues on application

Reference :

S. RISBEY PTY. - Mildura, Victoria

M. CHRISTIANSEN - - Liverpool, New South Wales

Sole Agents for Australasia and New Zealand

SCIENTIFICALLY FITTED GLASSES ENSURE COMFORT

IF you are in doubt as to whether you require glasses or not you should have your eyes tested by an expert. The Optical Service our Clients enjoy ensures comfort in wearing glasses that fit accurately.

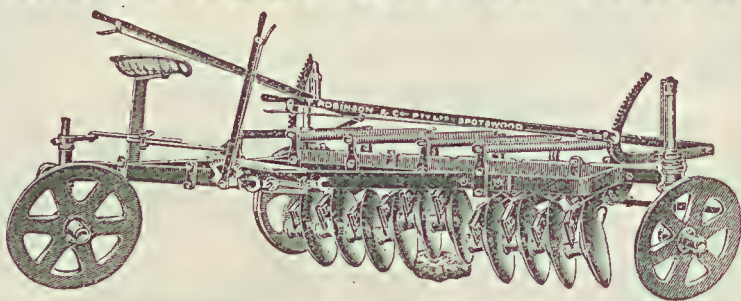
Phone 6778 for an appointment

E. WOOD PTY. 95 ELIZABETH STREET
LTD. — MELBOURNE —

OPHTHALMIC OPTICIANS

Stevenson

GOOD CULTIVATING TOOLS



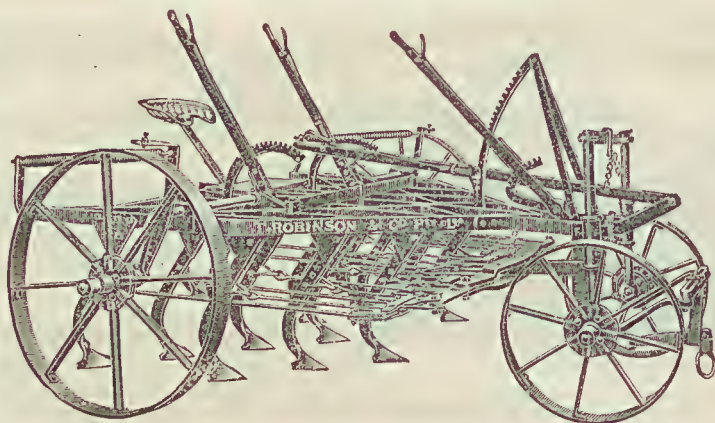
Federal Stump Jump Twin Disc Cultivators

made in 10, 12, and 14 Disc Sizes.

Discs work in pairs, but are independent in action, give uniform furrows — no ridging when natural wear takes place. Device for control of rear wheel a special feature. A splendid implement for Cultivating stubble and fallow land

One Way Disc Cultivators

Set Pattern, made in 8, 10 13 and 15 Disc Sizes.



Federal Scarifiers - Set and Stump Jump

made in 15, 17, and 19 Tyne sizes embodying the latest improvements.

Special bracing gives it a very strong and rigid frame. The Federal Scarifier is stronger than the usual Implement of this Type and aims at giving something between the lighter and heavier designs of similar competing tools.

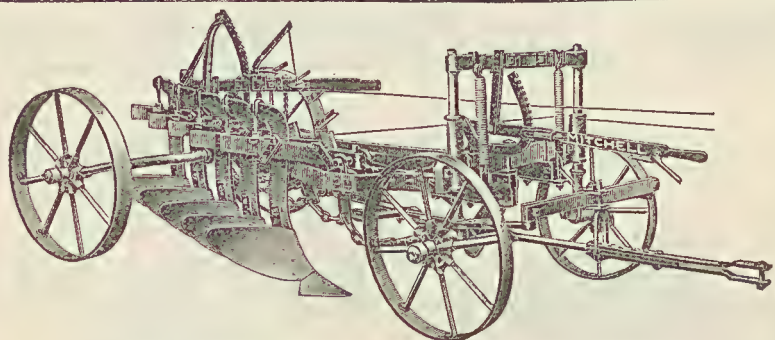
The Illustration shows new features.

Write for particulars.

T. ROBINSON & COMPANY PTY. LTD.

SPOTSWOOD, VIC.

Showrooms: 536-538 Bourke St., Melbourne



Disc or Mouldboard Ploughs. Any Size. Horse or Tractor.

Any depth while ploughing can be had

If you have a Mitchell Self-Lift Tractor Plough. In an instant, too! And without effort! ONLY PULL A ROPE—THE TRACTOR DOES THE LIFTING! SO IT SHOULD! Every tractor ploughman NEEDS this lift, because it enables you to plough to the RIGHT depth the different conditions of soil often found in one paddock. When the plough sinks at a soft spot; a pull on the rope lifts it to the depth you want. It is the only plough that puts you in COMPLETE control of the plough and ploughing.

MITCHELL & Co. Pty. Ltd.

Head Office and Factory: West Footscray. Showroom: 596 Bourke St., Melbourne.
New South Wales Headquarters: Parkes. G. Wills and Co., Perth.

Further Reduction in Prices

SEASON 1928—1929

Wheat Farmers! Profit by Using

ANTI-BUNT

The finest and purest Copper Carbonate

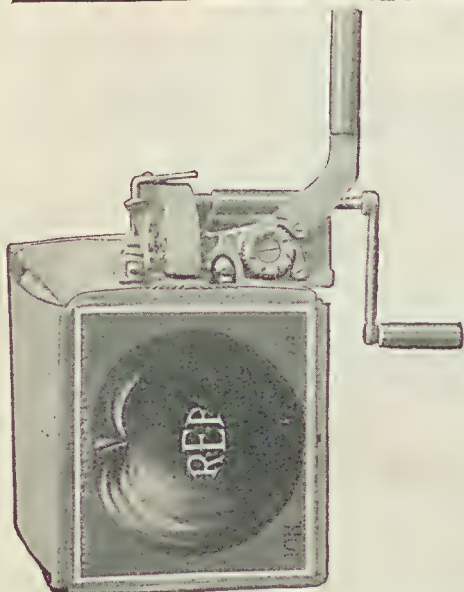
Full particulars on application to

Manufacturers - A. VICTOR LEGGO & CO.
222 QUEEN STREET, MELBOURNE

BRANCHES—SYDNEY AND BRISBANE

AGENTS—ALL STATES

What the Buyers Want



Export Fruit packed in
the Standard Case and
reinforced and sealed with

Gerrard Wire Seal Strapping

Reaches the market in better
condition and
RETURNS HIGHER PRICES

Full particulars from

GERRARD WIRE-TYING MACHINES Co. Pty. Ltd.
119-125 Hawke Street, West Melbourne
Sydney, Brisbane, Adelaide, Perth, Hobart

ESTABLISHED 50 YEARS

THE Trustees Executors & Agency Co. Ltd.

412 COLLINS STREET, MELBOURNE

Directors:

SIR JOHN GRICE, Chairman.
SIR J. H. MACFARLAND, M.A., LL.D., Vice-Chairman.
R. O. BLACKWOOD D. STUART MURRAY ALEXANDER STEWART
J. FORDYCE

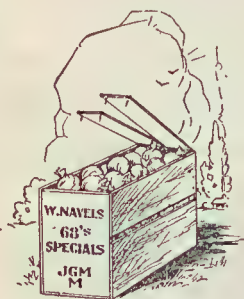
*Empowered by Special Acts of Parliament to operate in the
States of New South Wales and Victoria.*

**The Company specializes in the management
of farms and station properties**

Please call or write for explanatory booklet.

CHAS. R. SMIBERT,
General Manager.

V. G. WATSON,
Manager.



There's Plenty of Room at the Top

There's plenty of scope for the man who concentrates on the production of the highest grade of farm, orchard, or garden produce. The market for the BEST never seems to be over-supplied. But the problem of bringing QUANTITY and QUALITY closer together there's the "catch."

Use Sulphate of Ammonia

(Nitrogen in its ideal form), and watch its happy influence on both aspects of production—yield and quality. Progressive men those who lead in the agricultural and horticultural industries, are liberal users of SULPHATE OF AMMONIA. They have found that Sulphate pays. You will too. Try out a small experimental quantity this year.

Literature from

THE METROPOLITAN GAS COMPANY,
196 Flinders Street, Melbourne.

NATIONAL TRUSTEES

Executors & Agency Company of Australasia Ltd.

DIRECTORS :

EDWARD FITZGERALD, Esq., LL.D., Chairman.
 SENATOR MAJOR-GENERAL H. E. ELLIOTT, C.B., C.M.G., D.S.O., D.C.M.
 JOHN I. WINTER-IRVING, Esq. CHAS. R. MURPHY, Esq.
 JOHN S. FEEHAN, Esq. EDWARD RYAN, Esq., M.B. et Ch.B.

This Company Acts as Executor or Joint Executor of Wills, Administrator, Trustee of Settlements, and Agent for Absentees under Power of Attorney.

MONEY TO LEND ON BROAD ACRES AND FARM LANDS

Offices—113 Queen St. (Corner of Little Collins St.), Melbourne

CHAS. CROMIE, Manager.



Is a simple arrangement that multiplies the power at the handle 260 times—handy to use, easy to move, quickly rigged, and works in roughest country. Standard equipment pulls trees and stumps from 1½ acres without changing anchor. Many other time and labour saving features. Catalogue with pleasure.

TREWHELLA BROS. Pty. Ltd., TRENTHAM

CLEAN, SMUT-FREE WHEAT CROPS ASSURED

BY USING

SICKLE



BRAND

COPPER CARBONATE

Highest Grade—over 90 % Pure

Does not injure germination. Wheat may be pickled months before sowing, after which the seed keeps in perfect condition until sowing time

Reduced Price for 1928-29 - 1/6 Per
 In 6-lb. (wax-lined) Packets **lb.**

Obtainable from our Manure Agencies or your local Storekeeper

Made in Australia by

**CUMING, SMITH & Co. Pty. Ltd. (G.P.O. Box 390) 65 William St.
 MELBOURNE**

UNEQUALLED!!



Lewis & Whitty's “D” Sunproof Oil

has stood the test of time,
and is still the superior heavy-
bodied stringy oil that is
sought by Agriculturists.

“D” Sunproof Oil
is guaranteed to maintain its
lubricating properties under
extreme conditions of heat.

Manufactured to Lewis & Whitty's formula by
NEPTUNE OIL COY. LTD.

RICHMOND, VICTORIA

Also Sydney, Brisbane, Adelaide, Fremantle, Hobart & Launceston

BRUNNING BEST FOR BEARING FRUIT TREES

(True to Name and Healthy)

ARE PLANTED THROUGHOUT AUSTRALASIA

Shipments made to all Parts of the World

JOHN BRUNNING & SONS

Established 60 Years

SOMERVILLE NURSERIES,
SOMERVILLE,
VICTORIA — AUSTRALIA



REGISTERED TRADE MARK

Works—

CURDIE'S RIVER

Telephone—J 2807

"BULLDOG" Burnt & Unburnt (Ground Carbonate) Agricultural Lime

For Orchards, Crops, and Pastures

Its use is strongly recommended by all experts, and those who have had practical experience. Any quantity supplied at shortest notice.

For applying to land we recommend our "Ajax" Lime Spreader

Also Builders' Lime, all brands Cements,
and Builders' Hardware

Revised prices from Distributors—

T. CURPHEY Pty. Ltd. 344 Swan St.
Richmond, Victoria

'PHONE 7419 CENTRAL

.. THE ..

Australasian Mutual Insurance Society

LIMITED

(Now Incorporated in the Australian Alliance Assurance Company.)

400-2 COLLINS STREET, MELBOURNE

LIVE STOCK INSURED

At Lowest Current Rates obtainable in Australia.

OTHER DEPARTMENTS OF BUSINESS

Fire, Marine, Fidelity Guarantee, Plate Glass, Personal Accident
and Sickness, Employers' Liability, Workmen's Compensation,
Public Risk, Motor Car, and Burglary.

INSURE WITH THIS SOCIETY, AND RECOMMEND IT TO YOUR NEIGHBOURS

HAY- STACK COVERS



500 Tons of Hay Covered with 3-Star Covers, Glen Tree Estate, Moriac.

For covering Hay-stacks, Onions, Wheat, Wool, Lucerne, and for general use as a Tarpaulin. We also manufacture Duck Tarpaulins, Verandah and Window Blinds, Tents, Car Covers, and all Canvas Goods. Please write for full price list.

WYETT MANUFACTURING CO. Pty. Ltd.

21-23 Bellarine Street, Geelong, Victoria. 'Phone, 1688

Prices of a few stock sizes.

Sizes in ft.	3-star.	4-star.
12 x 20	£2 3 0	£3 1 6
12 x 24	2 13 6	3 15 0
18 x 20	3 8 6	4 11 0
18 x 24	4 2 6	5 9 0
18 x 27	4 12 6	6 3 0
21 x 30	5 17 6	7 17 6
22 x 24	5 7 0	6 14 6

Ropes, if required, 3/6 cover, except 22 x 24 ft. Any size made to order.

LILYDALE LIME For the LAND

Farmers who have not used **Burnt Lime** should try it. The action of Burnt Lime on the land is **Immediate**. Farmers have the opportunity of obtaining the **well-known Lilydale Agricultural Lime**.
ANALYSIS—98% Calcium Oxide.

Apply—
DAVID MITCHELL ESTATE,
Sole Proprietors.

Head Office:
OLIVER'S LANE, MELBOURNE
Tel. Central 5725 and 5726.

Australian "ESA" Bluestone

APPROXIMATE ANALYSIS 99.15% COPPER SULPHATE.

FOR SPRAYING, PICKLING, BATTERY PURPOSES, ETC.

If your Storekeeper has no Stocks, Send your Inquiries to:—

ELDER, SMITH & CO., LIMITED, SOLE AGENTS

ADELAIDE:
27-31 Currie Street.

MELBOURNE:
95-97 William Street.

SYDNEY:
4 Bridge Street.

BRISBANE:
334-338 Queen Street.

PERTH:
St. George's Terrace.

— WRITE FOR DESCRIPTIVE PAMPHLET —



The Best
IS
The Cheapest.

LYSAGHT'S AUSTRALIAN
MADE

**WIRE NETTING, FENCING AND OTHER
WIRES, ZINC OXIDE**

are known as the Very Best throughout Australia

Obtainable from all Leading Merchants and Storekeepers

LYSAGHT BROS. & CO. LTD.

Head Office—39 Pitt Street, SYDNEY
Works—Parramatta River

Agents for Victoria
GIBBS, BRIGHT & CO.

COCKBILL'S BONE MEAL for FEEDING

CATTLE, PIGS, and all FARM STOCK

IS A SOURCE OF LIME, PHOSPHATES, AND PROTEIN.

Most Fodders are deficient in mineral matter—
BONE MEAL will provide the necessary mineral matter.

COCKBILL'S BONE MEAL is manufactured from clean, fresh bones, steamed and sterilized at a high temperature and pressure, and finely ground to ensure easy digestion.

Price, 16s. per cwt.

Sample on request to

J. COCKBILL,

407 POST OFFICE PLACE,
MELBOURNE.

The "Fulham Park" Ayrshire Stud

ROCKBANK, VICTORIA (20 MILES FROM G.P.O.)

Topped Ayrshire Herd, 1927

All Government Tested YOUNG BULLS FOR SALE

The "Fulham Park" Stud of Peerless Black Leghorns

The best (by test) this side of the Line.

EGGS AND STOCK FOR SALE

Inspection and correspondence welcomed.

J. COCKBILL, 407 P.O. Place, Melbourne, Victoria.

Trouble Proof Tractor Farming

Is very largely a matter
of using the correct fuel.

The perfect fuel means
complete combustion, a
clean engine, and extra
power. All these essentials
are positively guaranteed
by CROSS—the farmers'
standard of efficiency
throughout Australia.

CROSS POWER KEROSENE

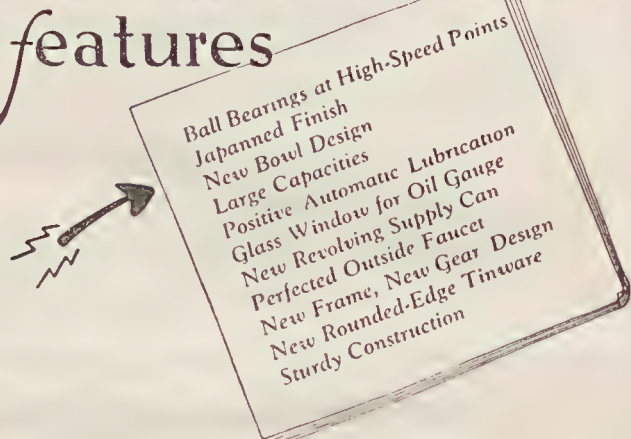


THE SHELL COMPANY OF AUSTRALIA LIMITED

CK214

Cream Separator News!

A New and Complete Line of McCORMICK-DEERING BALL-BEARING SEPARATORS features



AN entirely new line of cream separators in sizes to suit all herds — "for one cow or a hundred." Capacities range from 35 to 150 gallons of milk per hour. Hand, belted, or electric. Every model is equipped with high-class ball bearings at all high-speed points. It is easy to turn—easy



to keep clean. Attractive in appearance—sturdy in construction—durable and dependable. Ask the McCormick-Deering local agent to tell you all about the new McCormick-Deering line of ball-bearing cream separators, or write to us direct and we will send you our new illustrated catalog.

INTERNATIONAL HARVESTER COMPANY OF AUSTRALIA
PTY. LTD.

278-294 Roma Street BRISBANE 229-231 Castlereagh Street SYDNEY 513-555 Bourke Street MELBOURNE, CI 113-114 North Terrace ADELAIDE

RICHARD PURSER & CO., BASSENDEAN, AGENTS FOR W.A.
ROBT. NETTLEFOLD PTY. LTD., HOBART, AGENTS FOR TAS

THE JOURNAL

OF THE

Department of Agriculture

OF

VICTORIA.

Vol. XXVII.

January, 1929.

Part 1

MALLEE WHEAT-GROWING EXPERIMENTS.

CULTIVATION TESTS AT CARWARP.

Four years ago the Department of Agriculture commenced a series of experiments to determine the best methods of fallowing and cultivating Mallee land in preparation for wheat. The plots were laid down on the experimental field conducted by the Department on the farm of Mr. P. G. Stewart, M.H.R., at Carwarp, and were designed to compare early and late fallow with non-fallow, and fallow that had been cultivated in various ways with fallow neglected between the time of ploughing and seeding.

The results of these trials for the past year are as follow:—

Treatment.	Yield 1928. (Bushels per Acre.)
Summer fallow, ploughed March, cultivated July (standard working)	9·8
Winter fallow (standard working)	10·3
Late fallow (October)	8·8
Winter fallow (dry working)	4·8
Winter fallow (neglected)	4·6
Non-fallow	2·5

Commenting on these results the Superintendent of Agriculture, Mr. H. A. Mullett, points out that, despite the unusual nature of the season, they confirmed the results of the tests in the three previous years. Very adverse conditions had been experienced in this portion of the Mallee over the past two or three years. The succession of unfavorable seasons had resulted in light yields, and settlers in this area had had very little return for their labour, even where they had adopted the most advanced methods of cultivation. This year, owing to the "topsy-turvy" nature of the season, there had been some cases in which land farmed according to what were recognized as being the best methods had given yields inferior to those obtained on land which received less careful preparation. It is pointed out, however, that instances such as these are the

result of chance, and that, in the long run, proper methods of cultivation will give much more profitable results than indifferent methods. This is borne out by the results of the plots, which again show the superiority of the methods that have been advocated by the Department in the past. The appearances of the plots changed from time to time during the growing season, and at one stage it looked as though the crops on the late and neglected fallows would give the best yields. The actual figures, however, show that the more thorough methods of cultivation enabled the crops grown on properly-prepared fallow to finish off best. Thus, while the non-fallowed plot yielded only 2.5 bushels per acre, and winter fallow which had been neglected gave only 4.6 bushels per acre, winter fallow which had been worked in the standard manner yielded 10.3 bushels per acre. There was no appreciable difference between winter fallow and summer fallow, the latter yielding at the rate of 9.8 bushels per acre.

Results over a number of years are more reliable than the figures of any one year, and the average figures for the four years during which these trials have been conducted at Carwarp can be taken as an accurate indication of the relative values of the various methods of cultivation. These figures are as follow:—

Treatment.					Average Yield, Four Years. 1925-1928. (Bushels per Acre.)
Summer fallow (standard working)	..	..	..	..	11.7
Winter fallow (standard working)	..	..	..	..	11.7
Late fallow (October)	..	..	..	..	9.4
Winter fallow (dry working)	..	..	..	..	9.2
Winter fallow (neglected)	..	..	..	..	7.5
Non-fallow	..	..	..	..	5.1

These figures show that early fallowing is essential for profitable crops in this portion of the State, and that yields from properly-worked fallow are definitely superior to those from fallow which has been neglected or worked dry. The Department regards proper preparation of the land as fundamental to successful wheat-growing in a district such as Carwarp, and the fact that imperfectly-prepared land happened in some cases to give better results in one year such as this should not influence settlers to discard the better methods. Continual cultivation of the fallow is not necessary, but the grower should aim to fallow as early as possible, and then to cultivate the fallow sufficiently to prevent the surface from caking, and to destroy any weed growth.

Variety Tests at Carwarp.

The unfavorable seasonal conditions experienced in the Northern Mallee in the year just past again resulted in low yields, and the experimental plots at Carwarp were no exception to the general rule. But, despite the fact that yields were light, the comparative figures afford interesting comparisons as to the value of different varieties and various methods of manuring under the conditions obtaining in this district.

For the past four years the seasons at Carwarp have been unfavorable to wheat growing, and though the 1928 season opened well and there was early promise of record returns, the paucity of rains during August and September set the crops back and resulted in a substantial reduction in yields.

Reporting on the tests which have been conducted to determine the most prolific and suitable varieties of wheat for conditions in the Northern Mallee, the Superintendent of Agriculture, Mr. H. A. Mullett, states that obviously the season had favoured the early varieties such as Rajah, Mac's White, and Nabawa, which were at the top of the list with Rance—an early to mid-season variety. Rajah yielded at the rate of 12.9 bushels per acre, while Mac's White gave 12.4 bushels per acre, Rance Selection 11.6 bushels, and Nabawa 11.5 bushels. Federation was again low down on the list with a yield of only 8.5 bushels, a position which it has occupied practically every year since these plots were established, and, so far as the Northern Mallee is concerned, the tests may be regarded as having dispelled finally any claims Federation might have had for use there. The actual yields for the year were as follow:—

YIELDS, 1928.

	Bushels per Acre.		Bushels per Acre.
Rajah	12.9	Canberra x Hard Federation ..	9.4
Mac's White	12.4	Ghurka	9.2
Rance 4 H	11.6	Sepoy Selection	9.0
Nabawa	11.5	Bena	8.1
Mogul	10.3	Currawa x Major x Gallipoli ..	7.9
Rance x Rajah	10.3	Daphne	7.9
Confederation	10.3	Federation	7.7
Rance 4119-2-11-2	10.2	Free Gallipoli	7.5
Rance	10.2	Currawa	6.7
Waratah	10.2	Wandilla	5.9
Sepoy	9.5	Yandilla King	5.8

This year's results show the comparative values of the different varieties only under the conditions of one particular season, and a more reliable indication as to which are the superior varieties is to be obtained from a study of the average yields over a number of years. Thus, over the past six years Sepoy, a late variety, has given the highest average yield—17.1 bushels per acre. Ghurka has proved second best with 16.9 bushels per acre, while Confederation gave 16.7, Rajah 16.2, Mac's White 16.2, Rance 16.1, and Free Gallipoli 16.0 bushels per acre. Yandilla King, a popular variety in the Mallee, gave an average yield of 15.7 bushels, Federation 15.1 bushels, and Currawa 14.9 bushels per acre.

In the past there has been a tendency to regard the early varieties as certain to be the more suitable for the Mallee, where the seasons are short; but, although they have been satisfactory in the present year, results over a long period demonstrate that it is the inherent capacity of a wheat to yield well that counts rather than the length of its growing

period. This conclusion is supported by the fact that over a period of years Sepoy, a late variety, has headed the list both at Carwarp and Walpeup.

Replicated Variety Tests.

The replicated variety tests, which were designed with the object of obtaining more accurate comparisons than are possible with the usual methods of testing, were repeated this year with the same varieties compared last season. These were Free Gallipoli, Sepoy, Ghurka and Yandilla King, the latter being used as a check variety. As in the previous year, the three former varieties each proved superior to Yandilla King. The four plots of Free Gallipoli averaged 8.5 bushels per acre, while the corresponding plots of Yandilla King yielded 6.2 bushels per acre—an increase of 2.3 bushels per acre in favour of Free Gallipoli. Ghurka averaged 1.9 bushels per acre better than Yandilla King, while Sepoy gave an average increase of 1.6 bushels per acre over the control.

The outcome of the work at Carwarp is to show conclusively that the new varieties bred at the State Farm, Werribee, for the Mallee are definitely superior to what have been regarded as the standard Mallee varieties. Of the older varieties, Mac's White is the only one that is holding its own against the newer wheats. Varieties such as Daphne and Wandilla, which were introduced from other States, failed badly, and this year is the second occasion on which Wandilla, a variety popular in New South Wales, has been at the bottom of the list.

Manurial Tests.

The manurial trials consist of comparisons of applications of 30, 60, 90 and 120 lb. of superphosphate respectively with an unmanured plot. There are two series of plots, but these were unequally affected by the dry season. The actual yields for the season were as follow:—

Treatment.				1st Series. Bushels per Acre.	2nd Series. Bushels per Acre.
No manure	..	..	..	11.3	10.1
Super. 30 cwt.	..	..	..	12.1	12.6
Super. 60 "	..	..	..	11.3	11.4
Super. 90 "	..	..	..	14.5	8.8
Super. 120 "	..	..	..	13.8	5.8

The average yields over the past thirteen years are given in the following table:—

				Average Thirteen Years, 1916-28. Bushels per Acre.
No manure	..	..	..	10.5
Super. 30 lb.	..	..	..	13.1
Super. 60 "	..	..	..	13.7
Super. 90 "	..	..	..	14.3

If the wheat be valued at 4s. 6d. a bushel, and the cost of superphosphate taken at £6 a ton on the farm, the following figures show the increase in return due to the various dressings of fertilizer:—

Treatment.	Average Yield, 1916-28.	Increase over No Manure.	Value of Increase at 4s. 6d. Bushel.	Cost of Super. at £6 Ton.	Net Increase due to Super.
	Bushels per Acre.	Bushels per Acre.	s. d.	s. d.	s. d.
No manure	10.5	..	..	..	..
Super. 30 lb.	13.1	2.6	11 8	1 7	10 1
Super. 60 „	13.7	3.2	14 5	3 2	11 3
Super. 90 „	14.3	3.8	17 1	4 9	12 4

These results are in accord with those of manurial trials carried out in different Mallee districts for a number of years, in that they show that, on well-prepared fallow land, 90 lb. of superphosphate is the most profitable dressing to use.

VARIETY TESTS AT WALPEUP.

Despite the adverse season experienced last year, very satisfactory yields of wheat were obtained on the experimental plots conducted by the Department of Agriculture at Walpeup. As in other parts of the Mallee, crops at Walpeup received a splendid start, but the abnormally dry winter and early spring gave them a severe set-back, and the early ideas of record yields had to be modified considerably. However, a number of crops made a remarkable recovery, including those on the experimental field, after the good rains which fell at the end of September and early October, and under the circumstances the yields obtained must be regarded as highly satisfactory. The high yields recorded in such an unfavorable season were due, in no small measure, to the careful cultivation of the fallow by Mr. R. C. F. Gniel, on whose farm the plots are located.

Seventeen varieties of wheat, including several new crossbreds, were grown side by side in plots each a quarter acre in area. These were sown early in May on well-worked fallow. Dry pickled seed was used at the rate of 60 lb. per acre, and each plot received a dressing of super. at the rate of 92 lb. per acre. The yields for the year were as follow:—

Variety.	Yield, 1928 (bushels p.a.).
Sepoy	26.9
Sepoy Selection	26.8
Ghurka	26.1
Currawa x Major x Gallipoli	24.1
Currawa	23.5
Free Gallipoli	22.9
Rance Selection 4H	21.9
Rajah	21.6
Rance	21.2
Rance x Rajah	21.0
Mogul	20.4
Nizam	20.3
Yandilla King	20.2
Confederation	19.9
Indian F x Federation	18.4
Federation	17.4
Joffre	16.3

Sepoy has been the most consistent variety at Walpeup, having been at or close to the top of the list in each of the four years in which the tests have been conducted at Walpeup. Over the three years, 1925, 1927 and 1928, Sepoy has given an average yield of 23.2 bushels per acre, while Federation is at the bottom of the list with only 18.6 bushels per acre. The average yields over this period are as follow (1926 yields have been omitted owing to the unevenness in the field having affected the results):—

Variety.	Average Yield, 3 Years, 1925, 1927, 1928 (bushels p.a.).					
	..	..	..	..	..	..
Sepoy	..	..	..	..	..	23.2
Free Gallipoli	..	..	..	..	..	22.0
Ghurka	..	..	..	..	..	21.9
Rajah	..	..	..	..	..	20.9
Ranee	..	..	..	..	..	20.7
Currawa	..	..	..	..	..	20.6
Nizam	..	..	..	..	..	19.7
Yandilla King	..	..	..	..	..	19.5
Mogul	..	..	..	..	..	18.7
Confederation	..	..	..	..	..	18.7
Federation	..	..	..	..	..	18.6

Sepoy has also demonstrated its superiority at Carwarp, and has thus proved its suitability for the Northern Mallee. It is a comparatively short variety, and hence it is not advisable to sow it on land in which Mallee shoots still persist. Federation, on the other hand, has given consistently inferior yields at all Northern Mallee centres, and now the better varieties are available, there is no reason why growers in this district should continue to use it.

In the comparison of varieties of oats, Lachlan gave the best yield, but it has been found difficult to secure reliable figures because of the depredations of birds, whose attacks were more severe on the early varieties. The variety Palestine was the worst sufferer last year. The yields were:—

Variety.	Yield (bushels p.a.).					
	..	..	..	..	..	..
Lachlan	..	..	..	..	..	32.5
Algerian	..	..	..	..	..	29.6
Sunrise Selection	..	..	..	..	..	27.4
Burt's Early	..	..	..	..	..	23.9
Palestine	..	..	..	..	..	22.9
Sunrise	..	..	..	..	..	19.8

Over the last two years, however, Palestine has given the best average yield (25.4 bushels per acre), while Lachlan is second (24.9 bushels), Algerian third (23.9 bushels), Sunrise fourth (22.6 bushels), and Burt's Early last (19.7 bushels per acre).

The manurial trials have again confirmed the results of previous years' tests in showing that, under similar conditions, a dressing of super. at the rate of 90 lb. per acre is more profitable to the grower than one of 30 or 60 lb. per acre.

The yields for 1928, together with the average yields over the past four years, are shown in the following table:—

Treatment.				Yield 1928 (bushels p.a.).	Average Yield, 4 Years 1925-28 (bushels p.a.).
No manure	..	..	..	14.4	15.4
Super., 30 lb.	per	acre	..	16.7	18.3
Super., 60 lb.	per	acre	..	17.8	19.9
Super., 90 lb.	per	acre	..	19.3	21.3
Super., 120 lb.	per	acre	..	19.6	21.8

From these figures it will be seen that over the four years' period a dressing of 30 lb. of super. per acre has resulted in increasing the yield over the unmanured plot by 2.9 bushels per acre. A dressing of 60 lb. per acre has given an increase of 4.5 bushels, while 90 lb. has increased the yield by 5.9 bushels, and 120 lb. by 6.4 bushels per acre.

EXPERIMENTS AT RAINBOW.

The outstanding feature of this year's results of the wheat experiments conducted by the Department of Agriculture on the farm of Mr. A. L. Harris, at Rainbow, was the marked superiority of the Werribee bread wheat, Free Gallipoli, over varieties like Federation, Nizam, and Rancee.

An exhaustive trial of the four varieties named was initiated last year, and under the conditions of the trial on that occasion little or no difference in yield was obtained. This year, however, in each of six separate comparisons made between Free Gallipoli and Federation the former beat the latter consistently by an average of about six bushels an acre. In both years Rancee and Nizam proved no better than Federation. The past season at Rainbow was a particularly trying one for wheat, inasmuch as only 7.8 inches of rain fell in the growing period from May to November, as against the normal rainfall for the period of 10.4 inches. Not only was the total amount well below average, but both September and November, two critical months, were almost rainless.

Free Gallipoli has thus again demonstrated its ability to withstand adverse conditions at a critical stage of the growth of the crop. Its drought-resistant qualities and high yielding capacity have made it very popular, and last year 425,000 acres were sown in Victoria with this variety.

In tests between Free Gallipoli and Federation the six plots sown to the former variety gave an average yield of 24.6 bushels per acre, while the six Federation plots averaged 18.6 bushels per acre. In the Nizam and Federation test the latter averaged 21 bushels per acre and the Nizam 21.1 bushels; and where Rancee and Federation were being tried in plots along side each other, the former returned an average yield of 21.5 bushels and the latter 21.4 bushels per acre.

In the manurial trials the results this year were in conformity with those of 1927, though yields on this occasion were considerably higher. The unmanured plot returned a yield of 13.4 bushels per acre, while where super. had been applied at the rate of $\frac{1}{2}$ cwt. per acre the yield was increased to 15.9 bushels. With a dressing of 1 cwt. of super. per acre the yield was 16.3 bushels, and with $1\frac{1}{2}$ cwt. of super. per acre it was increased still further to 17.2 bushels per acre. The average yields

over the two years in which these plots have been in operation are as follow:—

	Bushels per acre.
No manure	7.6
Super., $\frac{1}{2}$ cwt. per acre	10.1
Super., 1 cwt. per acre	11.4
Super., $1\frac{1}{2}$ cwt. per acre	12.2

If the increased wheat obtained as the result of the use of the fertilizer is valued at 4s. per bushel, and the cost of the super. is taken at £6 per ton on the farm, it will be found that the use of a dressing of $\frac{1}{2}$ cwt. super. per acre has resulted in a net increase in return of 7s. per acre. With a dressing of 1 cwt. of super. per acre the net increase is 9s. 2d., and with $1\frac{1}{2}$ cwt. 10s. These figures show that growers in this district should use at least 1 cwt. of super. per acre if they are to obtain the maximum results from their land.

TOP-DRESSING PASTURES.

Results at Kyneton.

During the past three years the Department of Agriculture has been conducting, at Kyneton, tests to determine the effects of various fertilizers when applied as a top-dressing on pasture lands. The experimental plots are located on a rye-grass pasture on the farm of Mr. W. Hutcheson, and on the bulk plots, which are each two-thirds of an acre in area, the whole of the produce is cut each year, cured as grass hay, and weighed. There are three of these plots, one being unmanured and the others treated with 1 cwt. and 2 cwt. of superphosphate per acre respectively. The fertilizer was applied in 1925, 1926 and 1928. The object of omitting the fertilizer in 1927 was to determine the residual effect of previous dressings. The pasture consisted almost entirely of rye grass, and in the first year no definite improvement was noticed, either in regard to the proportion of clovers or yield.

In both 1926 and 1927 there was an appreciable difference in yield in favour of the manured plots, the one receiving 2 cwt. per acre giving a substantially higher yield than both the unmanured plot and that which had received only 1 cwt. of superphosphate per acre.

The results for 1928 are now available, and these show that the improved yields have been maintained, the actual figures being:—

Treatment.	Yield per acre.
No manure	6 cwt. 1 qr. 17 lb.
Superphosphate, 1 cwt. per acre	7 " 0 " 14 "
Superphosphate, 2 cwt. per acre	10 " 3 " 10 "

While there was only a slight increase in yield in favour of a dressing of superphosphate at the rate of 1 cwt. per acre, where the heavier dressing was applied there was a substantial improvement. It was noticeable also that the plot treated with the heavier dressing of manure showed a much denser undergrowth, and included a much greater proportion of clovers than did either the unmanured plot or that treated with 1 cwt. of superphosphate per acre.

SEASONAL VITICULTURE.

By F. de Castella, Government Viticulturist.

The close of the calendar year should see most of the vineyard work completed, but there are operations yet needing attention between now and vintage. Some of these are routine work and some are of an emergency nature.

Irrigation and tillage are of the former class, and disease control in the shape of spraying and sulphuring, of the latter.

Summer pruning is often thought necessary, especially in the suburban garden. The useful forms of it, such as disbudding, topping, and cincturing have long since been attended to, and henceforth the best advice I can give on summer pruning is that of *Punch* to the young man contemplating matrimony—Don't. Topping is more particularly objectionable. All forms of summer pruning weaken the vine, but topping most of all. It is nearly always injurious and seldom useful. Only in the case of over-luxuriant vines that it may be desirable to deliberately weaken, is it of any service. Injudiciously practised, it is a fruitful cause of sterility and decline.

Irrigation and tillage are closely linked together; the former compels the latter. No watering should ever be given that is not followed by thorough stirring of the soil to provide the dust mulch so essential to conserve the recently acquired moisture for the benefit of the vine, instead of allowing much of it to waste by evaporation from the untilled surface. "Two hoeings are worth a watering," says the old French proverb.

In vineyards that are not irrigated the conservation of the greatest possible amount of soil moisture is imperative. Should summer rains fall, the scarifier must break the crust and restore the mulch, otherwise the rain may actually do more harm than good.

Even in the absence of rain, when there is no crust to break, summer cultivation is well worth while on account of its marked action in increasing soil fertility by stimulating the direct fixation of atmospheric nitrogen through the agency of various soil micro-organisms. This takes place at a shallow depth, and frequent stirring is needed to bring fresh quantities of soil under its influence. Startling results have been obtained in Southern France by shallow surface stirrings, executed weekly during the summer months.

Irrigation can only be briefly touched on in this article. We yet have much to learn concerning irrigation practice. The most common mistake is the too lavish use of water. The greatest amount of growth does not necessarily mean the maximum fruit crop.

Grapes are our objective, not canes and leaves in unnecessary profusion, as often results from excessive watering, not to speak of seepage and allied troubles it may be responsible for.

The vine must not be allowed to reach, or even to approach the wilting point during its growing season; provided this contingency be guarded against, it will usually acquit itself honorably in yield and growth.

Definite rules cannot be laid down, as different soils need different treatment, and allowance must be made for seasonal vagaries.

In one year three irrigations may suffice; in another, five may be necessary. Most of our irrigated vineyards are likely to need two waterings between the middle of December and vintage. The dates are a matter for local adjustment; in a big settlement it takes some weeks to supply all settlers.

The essentials are to wet the subsoil to a sufficient depth of at least 3 feet, and to follow at the earliest moment by thorough tillage.

In suburban gardens the same principles apply. The common mistake is almost continual sprinkling instead of two or three deep waterings followed by cultivation of the soil surface.

Disease control at this time of the year is aimed against our three most serious vine fungus pests--oidium, black spot, and downy mildew. Dusting with sulphur in fine powder protects our vines from the first and spraying with copper fungicides against the other two.

Oidium, or powdery mildew, to give it its very descriptive American name, has long been known in Australia. Though distinctively less prevalent than some 30 years ago, it is still fairly common and responsible for more damage than is usually realized, especially to table and drying grapes, the discoloration and splitting of some of the berries being only too familiar. Fortunately, it is easily controlled; its mycelium being external to the tissues of the host plant, permits of curative treatment which is quite impossible in the case of the other two vine fungi. Dusting with sulphur in fine powder on a day warm enough for the emanations to which it owes its fungicide action to be freely produced, soon clears the vine.

In addition to its value as a fungicide, sulphur has a very beneficial action on the growth of the vine. Sulphured vines are of a darker, healthier green. Applied at blossom the setting of the fruit is improved. Two or three sulphurings during the summer advance the date of ripening of the grapes by a week or ten days.

Though the way in which these results are brought about has not been satisfactorily explained, the advantages gained are such that, even in the absence of the oidium fungus the sulphuring of vines is strongly recommended. It is now too late to take advantage of its action at blossom time, but there is yet time to profit in the direction of earlier ripening. There is a gratifying recognition in our irrigated vineyards of the advantages of sulphuring, and this practice is becoming, each year, more general.

The irksome early morning sulphuring once recommended is now known to be unnecessary. It is really better to do this work during the day. Sulphuring with the thermometer over 100 degrees may lead to leaf scald. If the work be postponed until, say, 10 a.m., it is easier to forecast the maximum day temperature and thus avoid trouble of this kind.

Sulphuring is also the standard treatment for Erinose or warty leaf, caused by a microscopic mite, a fairly recent introduction that has caused some damage and much alarm in some of our irrigation areas.

Vine spraying is mainly directed against black spot and downy mildew. Black spot or anthracnose is an earlier starter than mildew, since it needs less warmth for its development. Spraying against this fungus was applied several weeks ago; fortunately, the spring was not well suited to fungus growth and little trouble resulted.

Downy mildew is the most deadly vine fungus and the most rapid in its spread, if weather conditions suit it. This feature and the internal situation of its mycelium render cure impossible, though prevention by spraying is fairly easy; but it must be applied before there are any visible signs of the fungus. Any efficient copper-containing spray may be used, but nothing is better than Bordeaux—10.5.50 strength—with casein as a spreader.

Downy mildew seldom makes its appearance before the end of October in this State. We have, this year, been lucky in escaping the spring outbreak, which is the most dangerous one; but we are not yet out of the wood, and other outbreaks are merely a question of wet weather—unusual, it is true, at this time of the year—and absence of protective spraying. Autumn mildew must, however, be guarded against. The destruction of the foliage is disastrous to the fruit. “No leaves, no sugar” is one of nature’s laws.

Premature leaf fall also reduces the following season’s crop. Vines that finish the season “under bare poles” have poor reserves with which to start next year. The result is a poor show of fruit in spring.

A protective spray in January mainly directed at the foliage is a wise precaution irrespective of the prevailing weather; it cannot be too strongly recommended. Needless to say, abnormal wet weather would necessitate further spraying.

In conclusion, the chief points demanding attention in the coming months are:—

Thorough tillage.

Sulphuring, not only as a fungicide, but also as a stimulant; and

A Bordeaux spray in January to protect from autumn mildew.

BOOK NOTE.

“Scientific Principles of Plant Protection,” by Hubert Martin.

(Published by Edward Arnold and Co., London.)

In recent years farmers and fruit-growers have been calling more and more on the entomologist and plant pathologist for aid in the continuous fight against plant pests and diseases, which become more widespread and severe with increasing specialization of crops.

While, in the past, the men engaged in dealing with the problem relied mainly on sprays and mechanical methods, the trend of modern development is to take a wider view of the position, and to turn Nature’s control—mechanism—to our own uses. The resistance of the farmers’ crops to disease needs to be encouraged by “selection and hybridization,” and by the scientific modification of external factors, by application of suitable fertilizers, modification of time of sowing, &c. The use of insects which prey upon their fellows is another important field which must not be overlooked.

Mr. Martin treats of these aspects as far as modern research has taken them, as well as going fully into the preparation and uses of insecticides and fungicides of the various classes. Copious references add to the value of a very useful book, the price of which is £1 1s. net; in Australia the amount charged would be slightly in excess of the London price.

IMPROVEMENT OF POULTRY FLOCKS.

By W. C. Rugg, Chief Poultry Expert.

Never in the history of the industry has there been greater need for the improvement of the poultry flocks of the State than there is to-day. The low prices that have been ruling for eggs for some time are making it difficult for many poultry-farmers to carry on. Though they, like every other section of primary producers, have practically no control over the prices to be obtained for their products, they can, in a great measure, control the cost of production, and by using every effort to reduce that cost, meet a season (not likely to be repeated) of low prices.

Cull out the Poor Producers.

It is a well-known fact amongst experienced poultrymen that at this time of the year it is an easy matter to identify the poor producers in a flock; by culling these out, the food bills can be reduced. The disposal of these poor producers not only saves money on the food, but often leads to higher production by the hens that are left, owing to the fact that they have more room, are more comfortable, and in some instances get a better supply of food. There are thousands of hens in Victoria that will earn 10s. and more per annum over feed costs, and a bird not capable of laying eggs of a yearly value of ten shillings should not be kept; yet I see many thousands every year that do not earn the price of the shell grit they eat, to say nothing of the food. These "boarders" eat up the profits made by the good birds; every useless bird carried on the farm makes away with the profit of at least one good bird. Yet the feed bills must be met, interest on capital goes on, as well as depreciation and labour costs.

What many poultry-keepers cannot, or will not, realize is that their whole success in the business hinges on just how much food their birds can eat, digest, and turn into eggs. Their birds are simply so many machines, and if those machines are not built on the right lines as to size and conformation, and unless each contains a strong healthy set of digestive organs, they will not make profits for their owner. It is along these lines that the greatest need for improvement in the flocks of Victoria lies.

From what we can read of other countries, we are not the only people in trouble. America, South Africa, and England are having their difficulties owing to small birds and small eggs. Recently I read in the *Feathered World*, which is published in England, a paper read at the Midland College Conference by Mr. A. V. Clarkson, a well-known English poultry salesman. He says, "As one who handles hundreds of thousands of hens every year, I am able to tell you frankly that 33½ per cent. of the birds I handle would never earn 10d. per year, let alone 10s. I get Leghorn hens scaling 2½ lb. to 2¾ lb. Do you imagine such birds would lay two ounce eggs every other day? I do not. Again, I get large quantities of birds which I vulgarly describe as stone bellies. Such birds have a solidified block of eggs weighing up to 2 lb. at the

back. The farmer could not have handled these birds for months. The same remarks apply to those with a large bladder of water at the back, which I term water bellies. These are signs of neglect on the farm, which I see from my end. The moral is to handle and know your birds. These passengers are eating up the profits on the good birds."

All this, I am sure, would be regarded by the poultry auctioneers in Melbourne as being exactly what is taking place in Victoria. I find that the men who are complaining most bitterly to-day of the prices they are receiving for eggs, and the conditions of the industry generally, are the very men who are running their farms with the class of stock so well described by Mr. Clarkson. Not so very long ago, I visited an old friend—a poultry farmer of many years' experience. After listening to his tale of woe regarding egg prices, &c., we had a walk through the sheds. When we had finished the round I asked him how would he like to have his egg cheque for the next week, and possibly for a few following weeks, increased by £5. He said that such a likelihood would give the future a more rosy tint. He asked how this could possibly be brought about, and I replied that I thought it could be done. About one-third of his birds were out of production, and I suggested that if these were sold he probably would not lose an egg, yet would save approximately £5 a week on the feed bill, to say nothing of the extra room which would then be available for his growing pullets. He would not be convinced that there were so many "boarders" until we made a second journey round the sheds. He admitted then that there were a few, but said he was waiting to see if he could get a couple of crates. A fortnight later he sent away eighteen crates of culled birds, some of which had not laid for months. Yet this man has been in the business for many years, and I am indebted to him for a lot of knowledge on poultry matters. Culling, however, is his little weakness. Poultry-farming during the present trying time means that if the ledger is to balance, the farmer must keep both eyes open every hour of every day in order to avoid losses that continually occur from keeping old hens, unprofitable hens, surplus cocks and cockerels, from rearing undersized weak pullets, and from wastage of foodstuffs.

On most farms there are always hens that should be sold, and the farmer will find this to be true if he will only examine his flocks regularly, always remembering that every "dud" hen is robbing him of about 3d. a week—every 100 of them of about 25s. a week. On every farm there should be a small pen in which these "passengers" can be put as soon as discovered, and as soon as there is enough to fill a crate they should be sold. There is no room for sentiment on a commercial poultry farm. Because cocks or hens have been bred from Mr. Somebody's 300-egg "strain" is no excuse for wasting good food on them if they are past profitable production. The proper time to market them is the day that they cease to be a profitable proposition on the farm.

There is an old adage that "There is as good fish in the sea as ever came out of it." This saying is particularly applicable as far as poultry is concerned. There is evidence in every country that better birds are being bred in greater quantities than ever was the case in the years that are past. As a great deal of the success in operating a poultry farm depends on the winter production of eggs by the pullets

that were hatched during August and September, it is necessary that these chickens be given very careful management for the next couple of months, if the best results are to be obtained from them.

Birds should not be Induced to Lay when too Young.

With our wonderful climate, abundant food supply and other favorable conditions, pullets, unfortunately, come into lay at a very early age, with the result that growth of body is arrested and small eggs are far too common. Some inexperienced poultrymen pride themselves on owning these early-maturing pullets, and make quite a boast about having them into lay at from four to four and a half months old, but if they could be held till they are five and a half to six months old, they would be more satisfactory, not only in bodily size, but the weight of each egg laid would be greater and the number of eggs would be increased.

I am well aware that it is very difficult to check some strains from laying while they are still only four months old or so, and impossible with some precocious individuals, but much can be accomplished by giving the growing pullets free range conditions and liberal grain feeding.

Plenty of Grain Food Essential,

As a result of a feeding experiment carried out by me at the Research Farm some years ago, I was convinced that many poultry breeders were not giving their growing pullets sufficient grain. On that occasion one lot of pullets were fed grain in a hopper which was always open to the birds against another lot of pullets fed grain in the litter. I fed these myself, and was satisfied at the time that they were getting each day all they would pick up before dark, but at the end of four months—April to July—after analysing the weights of the foods consumed by both pens, it was found that the birds that had the grain before them all the time had consumed 113 lb. more food during the four months, and although they cost 4d. per bird more to feed, they returned 3s. 5d. more per bird for eggs for that period. In addition, there was a great improvement in the growth of the birds. Many poultry-keepers, when they find that their pullets are showing signs of coming into lay too early, promptly cut down the food supply. This will certainly retard their growth; sometimes it will cause a false moult, and if bad weather follows, it often happens that colds will be prevalent in the flock, and maybe it will be only good fortune if there is not an outbreak of chicken pox or roup. A constant steady growth can best be obtained by giving the pullets free range, and a plentiful supply of plain wholesome food, of which at least 10 per cent. should be a good-quality dried butter-milk.

If they do come into lay, I would strongly recommend hopper-feeding them with grain, or at least trough-feeding grain to them at least two hours before roosting time. This will help the birds to maintain their bodily growth and should result in better sized eggs, and will prevent a false moult. A very close watch must be kept on the growth of pullets; any that are under-sized or showing signs of weakness or deformity should be immediately culled out and sold for table purposes. To be profitable as egg producers, pullets must be strong

and vigorous from birth and up to standard size, so that they will be able to stand the very heavy strain of producing eggs over a long period. Many men and women will destroy a stunted slow-growing cockerel without demur, but they look twice at a miserable pullet, and excuse themselves by saying it will lay sometime and perhaps pay the cost of its food. My experience is that in every flock of pullets, no matter how well bred and how well developed, there is too often a percentage of only moderate layers; therefore, we should never go to the trouble and expense of rearing pullets that will certainly never lay a profitable number of eggs.

MEADOW COMPETITION:

Held by the Central Gippsland Agricultural, Horticultural, and Pastoral Society, Trafalgar.

Report of the Judge, J. E. Harrison, B.Ag.Sc.

The promotion of a Meadow Competition by the Central Gippsland Agricultural, Horticultural, and Pastoral Society, marks another stage in the progress of a large fertile district, where the results of individual efforts in the past are now becoming the common knowledge of the community and being made the basis of local agricultural practice. It needs little imagination to see that there is going on in this, as in every other district of Victoria, with a rapidity that accords with modern times, the same sort of accumulation of knowledge and experience that has built up agricultural practice in the old countries of the world.

Local gatherings held from time to time give the opportunity for mutual education by the exchange of ideas and the welding together of odd pieces of information on any and every item of agricultural practice. Gatherings of this nature have been possible lately by the visit of the Better Farming Train, the holding of various agricultural shows, and the inauguration of a Field Day on a progressive local farm, all events that have stimulated interest, increased the knowledge of the people and left their mark on the district.

The Meadow Competition this year is the first of its kind that the Society has held, and while freely recognizing the healthy aspects of competition, one is obliged to examine its basis and its possible results. In an agricultural and pastoral district like Central Gippsland, where large milking herds are grazing the pastures the year round, it is permanent pasture that forms the staple source of food, with conserved fodder and fodder crops as supplements. In choosing hay pastures as the subject for competition, the Society would have in mind the importance of fodder conservation, and the desirability of fostering this side of animal husbandry, an outlook which must meet with support in all our developing pastoral areas. On the other hand, it is of still greater importance to foster the improvement of grazing pastures, and no doubt a practical standard could be drawn up for judging purposes, though an obvious difficulty is in ensuring equality of grazing conditions prior to judging.

Though the meadows entered were scattered over a wide district, from the hills of Thorpdale in the south, across the plains to Erica in the elevated forest country to the north, and occurred on many different classes of soil, a uniform standard of excellence prevailed in regard to both yield and freedom of the crops from weeds. On the other hand, the fields varied from pure clover stands to pure rye-grass stands, making it necessary for the purposes of the competition to compare the relative merits of two very different crops, and of mixtures of both. This was attempted from the point of view of yield, nutritive value, palatability, and the presence of weeds, and the results are submitted hereunder:—

RESULTS.

Name.	Yield.	Nutritive Value.	Palatability.	Freedom from Weeds.	Total.
Possible Points	50	25	15	10	105
Davey Bros.	47	23	13	7	90
Erbs, W. A. G.	50	20	10	8	88
Bubb, C.	43	22	13	9	87
Battley, —	41	23	14	8	86
Mills, C. F.	38	24	14	10	86
O'Brien, M. F.	40	23	14	8	85
Dalglish, W.	47	18	10	8	83
Ford, E.	35	24	14	9	82
Roach, W. J. (a)	43	20	12	7	82
Roach, W. J. (b)	38	22	14	8	82
Fletcher, W. and J.	35	23	14	9	81
Good, R.	38	22	12	9	81
Morgan, G. V.	35	23	14	9	81

COMMENTS.

Messrs. Davey Bros.' exhibit consisted of cowgrass mainly, with some subterranean clover, and a small proportion of rye grass. A few milk thistles and other minor weeds were noticed. This field, in which a highly fertile soil occurs, had been sown in 1926 with 12 lb. cowgrass, 1 bushel rye grass, and 1 lb. subterranean clover per acre, and has been harvested for hay each year; 130 lb. superphosphate had been applied at time of sowing. The crop was heavy, uniform, and of good quality, and remarkable for its excellence in the third season of growth.

The field shown by Mr. Erbs consisted almost entirely of rye grass (perennial). It had been sown two years ago to rye grass only and had been grazed until this spring. No manure had been applied to a highly-fertile soil. The crop was being allowed to run to seed, a factor which detracted, of course, from its nutritive value and palatability. A heavy, dense crop, fairly clean on the portion exhibited.

Mr. C. Bubb's field looked very green and attractive. It had been sown down seven years ago with $\frac{1}{2}$ lb. subterranean clover, 1 lb. white clover, 1 lb. alsike, 17 lb. cocksfoot, and 5 lb. rye grass per acre, and has been cut for hay each year. Rate of manuring—1 bag superphosphate per acre. Yellow suckling clover, subterranean clover and cocksfoot are now the main plants in the pasture, but some grasses of a less desirable type, such as Yorkshire fog, are also present.

Mr. Battley's field was a good mixture of rye grass and white clover, dense in parts, but not so uniform as some exhibits. It is some years old, was manured last year and this, and is an excellent type of permanent pasture.

The field, consisting mainly of subterranean clover, exhibited by Mr. Mills was very uniform, and dense, but not high. Mr. Mills is to be complimented upon presenting the cleanest field in the competition. It was sown four years ago to cocksfoot, rye grass, cowgrass, and subterranean clover, but consists now almost entirely of subterranean clover. The field had been grazed only in previous years, and was manured this year at the rate of one bag superphosphate per acre.

Mr. O'Brien's field, thought not so heavy as some, was of a high standard, containing a good mixture of cowgrass, alsike, and subterranean clover, with about an equal proportion of rye grass. It was three years old and had been top-dressed.

The crop presented by Mr. Dalglish was very tall, and looked well. Sown in 1926 with 12 lb. cowgrass per acre, harvested for hay each year, and top-dressed this year, it now consists mainly of grasses with a fair proportion of cowgrass, but the bulk of the grasses consists of soft brome, a plant which makes very light hay of only fair quality.

Mr. Ford's and Mr. Morgan's crops may be mentioned together, consisting, as they mainly did, of subterranean clover, dense, and fairly uniform, but not tall. They resembled Mr. Mill's crop very much, but were lighter in yield, and not so clean. These three crops occurred on somewhat similar soil of a friable type in the hill country.

Mr. Roach's exhibits were in contrast to each other, but were awarded equal points. The first was tall, consisting mainly of cocksfoot (in a somewhat advanced flowering stage for hay) with a good proportion of cowgrass, while the second was a younger field, more succulent, with a higher proportion of clovers, but was adjudged lighter in yield.

The only reducing feature of Mr. Fletcher's crop was its lightness. It contained an equal proportion of grasses and clovers of high nutritive value and palatability, and was very clean.

From the point of view of interest Mr. R. Good's exhibit was second to none. It consisted mainly of a clover that has only lately become prominent in the district, and has taken possession of the field against subterranean clover, white clover, and cowgrass, and, to a less extent, rye grass, with which the field was originally sown. The value of this clover to the district will be a matter of experience, and will be awaited with considerable interest. In the field exhibited it was from 10 to 12 inches high and very dense. It is known, botanically, as *Trifolium striatum*, or knotted clover.

Cocksfoot.

This grass is very suited to the hill country, where it grows freely and spreads of its own accord. Recent research in England suggests that the best results from this grass would be obtained if locally grown seed from old established pastures were used whenever fresh fields are sown. In this way those strains would be selected that have proved themselves adapted to the district, and are, therefore, more desirable for introduction into any new fields sown down. There appears to be room in any case for the further development of the cocksfoot-seed industry in Gippsland.

Cowgrass.

Providing, as it does, a good aftermath, in addition to a satisfactory hay crop, this plant deserves the increasing attention it is receiving in the district. The average productive life of a crop is generally accepted as three years, but the excellence of Messrs. Davey Bros.' exhibit would indicate that, under favorable conditions, the crop may be expected to last even longer.

Perennial Rye Grass and White Clover.

This ideal combination comprised the bulk of at least one field exhibited, and was noticed as well on many pastures on the heavy land in the plain country, where it grows freely and should be regarded as the greatest asset in farm productivity. Though these pastures, which are, of course, essentially permanent pastures, withstand heavy grazing, and even benefit by it, they should be fostered in every practicable way by maintaining high soil fertility for their continuous growth and luxuriance.

Subterranean Clover.

In the hill country, where the friable soils dry out rapidly in the summer time, this clover is coming into favour for the quantity of feed it gives throughout the remainder of the year. A light sowing, accompanied by regular top-dressing, rapidly gives a dense stand. It is important to remember that the plant is an annual, and should not displace perennials like perennial rye grass, white clover, and cowgrass, where conditions are suitable for the growth of these.

MURRAYVILLE CROP AND FALLOW COMPETITION, 1928.

Report of the Judge, R. L. Twentyman, B.Ag.Sc., Science Field Officer.

Unfortunately the crop and fallow competition conducted by the Murrayville Agricultural Society this year did not meet with the support it deserved. It was very disappointing to find that so large a wheat-growing district as Murrayville could obtain only eleven entries for the crop competition and twelve for the fallows. Although this is one of the old Mallee districts and most of the earlier difficulties have been surmounted, there are still many problems to be solved if the district is to make further progress. For this reason alone it behoves farmers of the district to give their whole-hearted support to the Society in its laudable efforts to promote better methods of cultivation.

Crop Competition—100 Acres.

Unlike most other localities, the Murrayville district does not appear to have any one popular variety of wheat. Most of the entries judged consisted of two or three varieties, and in no two instances did exhibits correspond in the varieties grown. This is not surprising in view of Murrayville's situation almost on the border of South Australia and

Victoria, where there are equal facilities for obtaining supplies of seed from each State. If, when any new variety was introduced, care had been taken that it was tested out carefully against known varieties, many of the wheats in the Murrayville district would never have got past that stage. No matter how even the soil conditions may be, the value of a new wheat cannot be assessed in any one season. It is not sufficient that a wheat should be capable of yielding well in one particular year; to be worthy of introduction it must give appreciably better yields than the standard varieties over a number of years.

A very noticeable feature of the Murrayville crops was the widespread occurrence of flag smut. Many were heavily affected, and in these cases an effort should be made to check its spread. A good burn and clean fallowing afford the only means of controlling this disease. Rust had also made its appearance at the time of judging, but the indications were that yields would not be materially reduced from this cause. In some cases the flag had been considerably damaged, but only in a few instances were affected stems noticed. Loose smut was present only in very small amounts in the competition crops, and ball smut was almost entirely absent.

The following are details of points awarded:—

Competitor.	Yield.	Type.	Evenness.	Absence of—		Total.
				Weeds.	Disease.	
Possible Points	35	20	15	15	15	100
Beck Bros.	31	19	14	14	13	91
D. Stewart and Son (No. 2)	26	19	12	12	13	82
F. A. J. Pahl	27	18	13	12	11	81
G. C. Pierce	27	17	13	12	11	80
F. A. Meagher	25	17	13	11	13	79
A. E. Ross	26	17	12	12	11	78
D. Stewart and Son (No. 1)	24	19	11	11	12	77
F. V. Ross	23	17	12	12	12	76
G. W. Cossens	24	17	12	11	12	76
J. D. Michan	23	17	12	12	12	76
E. E. Meagher	20	16	12	9	12	69

Messrs. Beck Bros'. crop of Sultan and Currawa was awarded first place with 91 points. Although short, the crop was very even and free from weeds. Very few strangers were present, and it was almost entirely free from disease. The crop had been sown at the end of May with 60-66 lb. of dry-pickled seed and 90 lb. of super. per acre.

Messrs. D. Stewart and Son's entry (No. 2), a crop of Free Gallipoli, Rajah and Nizam, was second with 82 points. The crop on the higher ground in this entry was excellent, but on the lower ground it had been burnt off by the dry weather and included a good number of weeds, for which points were deducted. Seeding had been carried out during the middle of May with 80 lb. of dry-pickled seed and 90 lb. of super. per acre.

Mr. F. A. J. Pahl obtained third place with 81 points. This entry consisted of four different varieties of wheat, some of which had been more severely affected by the dry weather than others, owing to the rate

of seeding having varied considerably. The crop was sown during the second week in May with seed pickled with bluestone solution.

Fallow Competition.

At the time of judging most of the fallows were very free from weeds, but on some of the entries the seeds had germinated and the young weeds were making rapid growth. Owing to the large supplies of moisture in the subsoil it is to be expected that weeds will demand more attention than usual this summer. Each weed growing on the fallow is an effective means of removing moisture from it. It is most desirable that this moisture should be carefully conserved, not only that it might be used by the crop sown on the fallow, but also to assist the minute soil organisms to work actively during the summer months. It is only when the soil is moist and warm that these organisms are most active in converting and storing up in the soil, reserves of plant food, that can be used by the following crop.

It was noticeable that on some of the fallows in the competition the last working had been rather deep and had produced too deep a mulch. This is not a very serious matter at this time of the fallowing period, for their should be ample time to obtain a firm seed-bed at the required depth; but such deep working in the autumn would be very injurious to the fallow.

AWARDS—BEST 100 ACRES OF FALLOW.

Competitor.	Moisture.	Mulch.	Cultivation.	Freedom from Weeds.	Total.
Possible Points	25	25	25	25	100
A. E. Ross	24	23	23	23	93
G. C. Pierce	24	21	22	24	91
J. D. Michan	24	22	22	23	91
F. A. J. Pahl	23	22	22	23	90
R. Hart	23	21	21	23	88
G. W. Cossens	22	21	21	23	87
D. Stewart and Son	21	21	22	22	86
Beck Bros.	22	21	21	21	85
F. A. Meagher	21	20	20	19	80
N. Etherton	22	19	19	20	80
F. A. J. Pahl	21	19	20	18	78
E. E. Meagher	22	20	19	17	78

Mr. A. E. Ross obtained first place with 93 points for an entry of a flat, uniform, loamy paddock. The seed-bed was found to be almost free from ridging and the mulch was in excellent order. The paddock had been ploughed to 2½ inches in June and July and harrowed immediately. A spring-toothing had been given early in September, and the last working again with the spring-tooth was given in the middle of October.

Mr. G. C. Pierce and Mr. J. D. Michan were equal second with 91 points. Mr. Pierce's entry consisted of a red loam rise, and had been ploughed in March and April to 2½ inches and again to 3½ inches in June. It was spring-toothed in July, and again in August. The last spring-toothing had been given towards the end of October. The

moisture content of the fallow was very high, and there were practically no weeds present. The mulch, however, was rather deep, and points were lost accordingly.

Portion of Mr. Michan's fallow had been spring-toothed in March, and the whole was ploughed to $3\frac{1}{2}$ inches during the latter half of June. It was spring-toothed the last week in July, and again in September and early October. It was again worked with the spring-tooth cultivator in the middle of October. Points were lost owing to the depth of working being a little uneven, and the mulch was inclined to be too deep in places. Again the moisture content was high, and very few weeds were present.

UNDERBOOL CROP AND FALLOW COMPETITION.

Report of the Judge, R. L. Twentyman, B.Ag.Sc., Science Field Officer.

The crop and fallow competition conducted by the Underbool Branch of the Better Farming Association was again well supported this year, no fewer than 51 entries being received.

In common with the rest of the Northern Mallee, Underbool has experienced another lean year. Conditions during the earlier part of the season were ideal, and the prospects for a record harvest had never looked brighter. With the failure of the early spring rains the hopes faded, and many had despaired of obtaining even sufficient seed for next year's crop. Fortunately, the splendid rain which fell at the end of September was followed by further showers and cool weather, and many of the crops made a rapid partial recovery. Though in some cases, especially on the lighter ground, the crops would approach those of a normal season, most of those inspected had suffered too severely during the initial period of their growth to give anything like an average yield. Late-sown crops, thin crops, and those sown with late varieties of wheat had not made sufficient growth to exhaust the supply of soil moisture before the rain came. Thus it has happened that those crops which, in a normal season, would have given the best returns, have been beaten by what would have been inferior crops. For this reason I would urge farmers in the Underbool district not to modify their standard practices merely because other methods have proved more successful this season. Sound farming practice must be based on the successful methods in an average year, and not on the results of a most unusual season.

Fallow Competition.

Twenty-nine entries were received for the fallow competition, and most of these were in excellent condition at the time of judging. Owing to the good rains during October, the fallows were well charged with moisture, and in most cases this was being carefully conserved by a well-maintained mulch.

On some fallows the last working had been given very early after the first rains, before the weed seeds had germinated, and in these cases the weeds were coming away freely. With so much moisture in the fallows, it is to be expected that summer weeds will be more troublesome than usual. Paddy melons will not cause much trouble if they are kept closely sheeped, but once they are allowed to grow freely they will soon get beyond the sheep.

Drift had been unusually bad on the fallows this season owing to the strong and continuous south-westerly winds experienced. In many instances it will materially benefit the flats, but in other cases the blowing was rather too extensive and much damage was being done. Ridging of the fallows in a north-south direction will hold the drift to some extent, but such ridges are not capable of withstanding such continuous winds as were experienced this year.

The following are the points awarded—Fallow 100 acres:—

Competitor.	Moisture.	Mulch.	Cultivation.	Freedom from Weeds.	Total.
Possible Points	25	25	25	25	100
E. Williams	23	23	23	24	93
E. G. Jones	23	23	22	24	92
Wisneske Bros.	23	23	22	23	91
H. J. Amos	22	22	23	22	89
W. Jackson	23	22	22	22	89
M. A. Jackson	23	21	22	22	88
A. W. Maxwell	23	22	21	22	88
J. A. Helyar	22	22	22	22	88
Brown Bros.	23	21	22	22	88
T. Dowler	23	21	21	21	86
R. Jenkins	23	21	20	21	85
F. C. Smith	22	21	20	22	85
W. A. Borgelt	22	21	20	21	84
A. Anderson	21	21	21	21	84
T. a'Beckett	22	21	20	21	84
R. J. Jenkins	22	20	19	22	83
H. Robinson	22	20	20	21	83
S. Pole	21	20	20	22	83
L. Elliot	22	20	20	20	82
W. T. Sharp	21	20	20	19	80
S. T. Rothwell	20	20	19	19	78
A. Kilpatrick	20	20	20	18	78
W. Aikman	21	20	19	18	78
C. Campbell	20	18	19	18	75
S. T. Rothwell	19	18	18	20	75
W. F. Callahan	18	18	18	19	73
W. Gullett	19	19	18	17	73
O. McCabe	18	19	17	19	73

Mr. E. Williams' fallow was placed first with 93 points. This entry, which consisted of a red loam rise, was in excellent order at the time of judging. The moisture content was high, weeds were almost entirely absent, and the cultivation was both straight and even. It had been ploughed to 3½ inches in June, combined late in July, and again early in October. It was again combined at the end of October.

Mr. E. G. Jones' fallow was second with 92 points. The mulch was not quite equal to that of the winning exhibit, but generally this fallow was in first-class condition. It had been ploughed to 3 inches in July and harrowed; it was next combined and spring-toothed during the second week in October.

Messrs. Wisneske Bros. obtained third place with 91 points. This entry consisted of a good red loam paddock rising gently to the east, and portion of this higher ground had been wind swept. The fallow had been first ploughed to 3 inches in March, scarified and harrowed in June, spring-toothed in July and again in October.

Crop Competition.

Twenty-two entries were judged in the crop competition. All showed evidence of the dry weather experienced, but those on the lighter ground had not suffered to the same extent as those on the heavier ground.

Although the crops were generally very free from loose smut and ball smut, the same could not be claimed in the case of flag smut. This disease is characterized by parallel black markings on the flag of the plant, which becomes twisted and deformed. Practically every crop inspected was affected with this disease; some only slightly, but others seriously. With flag smut, infection takes place from the soil in just the same way as with take-all. A good stubble burn, followed by a clean fallow affords the most satisfactory means of combating this disease. However, these efforts cannot be completely successful if infected straw and rubbish are allowed to blow on to the fallow from adjoining paddocks.

AWARDS. CROP—100 ACRES.

Competitor.	Variety.	Yield.	Type.	Even- ness.	Freedom from—		Total.
					Disease.	Weeds.	
Possible Points ..	.. ..	35	20	15	15	15	100
H. Robinson ..	Joffre ..	30	19	13	12	13	87
Burstall Bros. ..	Joffre ..	28	18	12	13	12	83
A. W. Maxwell ..	Sultan ..	28	18	14	10	12	82
W. Jackson ..	Joffre, Nizam ..	26	19	11	13	12	81
R. Lynch ..	Rajah, Rancee ..	26	17	12	13	12	80
H. J. Amos ..	Rancee ..	25	17	12	13	12	79
M. A. Jackson ..	Joffre, Bena, Free Gallipoli	26	18	11	12	11	78
Wisneske Bros. ..	Yellow Tuscan, Mogul, Rancee, Rajah	22	18	13	12	13	78
A. Anderson ..	Free Gallipoli, Mac's White	23	18	12	13	12	78
J. R. Rankin ..	Sepoy, Free Gallipoli	22	19	12	13	11	77
C. Brown ..	Currawa ..	22	18	11	12	12	75
W. Aikman ..	Joffre, Currawa ..	25	16	11	11	11	74
L. Elliot ..	Currawa ..	21	17	11	12	12	73
T. Dowler ..	.. ..	22	16	12	12	11	73
E. Jenkins ..	.. ..	19	17	12	13	12	73
F. C. Smith ..	.. ..	20	17	11	12	11	71
W. A. Borgelt ..	.. ..	19	17	11	12	12	71
W. Gullett ..	.. ..	18	17	11	13	12	71
O. McCabe ..	.. ..	19	16	11	13	11	70
C. C. Mengler ..	.. ..	18	16	11	12	11	68
C. R. H. Wondel ..	.. ..	20	15	11	12	10	68
A. Kilpatrick ..	.. ..	17	15	11	13	11	67

Mr. H. Robinson's entry of Joffre, which was placed first with 87 points, was an excellent crop for such an adverse season. It was well headed, even, and very free from strangers and weeds. The exhibit did not include any heavy flats and, as a consequence, it had no "burnt-off" areas. The ground had been fallowed in the previous July, and later workings given with the spring-tooth. It was sown with the combine during the second week in May with 60 lb. of formalin pickled seed and 90 lb. of super. per acre.

Messrs. Burstall Bros. were placed second with an entry of Joffre which obtained 83 points. Although a good crop, it was not as even as the winning exhibit and included a few more weeds. The land had been summer-fallowed and worked only after rain. It was sown at the end of May with 60 lb. of dry-pickled seed and 90 lb. of super. per acre.

Mr. A. W. Maxwell showed a very even block of Sultan wheat which obtained third place with 82 points. It had been sown in the middle of June with 50 lb. of dry-pickled seed and 60 lb. of super. per acre. Points were lost owing to the presence of disease.

ELMORE CROP AND FALLOW COMPETITION, 1928.

Report of the Judge, L. C. Bartels, B.Ag.Sc., Senior Irrigation Officer.

Wheat-growers in the Elmore district have reason to congratulate themselves on the excellent crops they have obtained this year. During the inspection, crops which should yield 40 bushels per acre were seen. Most of these were true to type and without any marked disease infection. None of the crops seen had entirely escaped rust, but apparently the vigour of the plants had enabled them to head well despite the disease. Flag smut showed in some degree on all crops, but there was a pleasing absence of take-all; only in one crop were there many "deadheads." Foot-rot, which was a bad feature of some of the Elmore crops in other years, was not observed this season.

Most of the competitors favour copper carbonate dust as a bunticide, but wet pickling is still preferred by many; formalin and bluestone both were used. Farmers should realize that, while there is a greater surety of killing bunt spores by the wet pickling methods, some of the wheat is killed in the process, and germination is retarded. With soil conditions such as exist at Elmore,, this latter may be a serious factor.

A bad feature of many of the crops submitted was the occurrence of wild oats. In one or two cases they spoiled the crops from a show stand-point.

Some farmers pretend to disregard wild oats, maintaining that good, clean wheat is recoverable when the wild oats shed their seed, and that they provide good feed for sheep. Every effort should be made to grow clean wheat crops; weeds are robbers which use the moisture and plant food intended for the wheat.

The treatment of fallows governs, to a large extent, the prevalence of wild oats, and, unfortunately, the conditions in 1927 were unfavorable for working the fallow. Still, many farmers managed to present clean crops, and on old ground, too.

One or two of the fallows entered in the competition had far too many wild oats in an advanced condition; sheep should have had access to them at an earlier stage.

Rough culture is practised in the Elmore district because of the tendency of the clay loam soils to run together, and fallows generally are left in a cloddy condition. On the question of how much cultivation should be given opinions differ, as is shown in the different treatment of the fallows entered in the competition; but there is a trend towards improved methods, in that many farmers now work their ground until

they obtain a knobby mulch; not so fine that it will form a crust with a light shower, but fine enough to be effective. If large clods remain on the surface or under the surface and are not broken down until seeding time, the weed seeds which they contain are not started till then.

The Crops.

Mr. D. Palmer's exhibit of crop had two sections—the bigger part was Federation and the balance Ranee. The Federation was a splendid crop, although a portion was irregular and showed wild oats. The Ranee was dense, clean, and uniform. A notable feature in both crops was the relative freedom from disease. The land was in crop in 1926. The ground was ploughed in July, 1927, to a depth of $4\frac{1}{2}$ inches, harrowed after ploughing, and later harrowed and rolled. In September it was cultivated and left till autumn, when it was worked three times at intervals with the spring-tooth cultivator. It was sown with the combine, seeding 66 lb. of copper carbonate dusted seed and 66 lb. of super. per acre. The young crop was grazed at the beginning of July.

Mr. J. Gow's exhibit also included an area of Ranee and of Federation. The crops were dense, and there was an absence of undergrowth, but wild oats showed. The ground was in wheat in 1926; it was ploughed in June-July, 1927, harrowed twice, and scarified twice in spring. It was scarified three times in autumn after rain and sown at the end of May with 70 lb. of copper carbonate-treated seed and 72 lb. of super. per acre. The young crop was not eaten off.

There were two varieties in Mr. D. Murphy's exhibit—Mayan and Currimp. These crops were clean, although not dense. With the exception of a little rust and flag smut, very little disease showed in either variety.

The Mayan made a striking exhibit of tall, well headed wheat. It was true to type, clean, and uniform. The Currimp had stoolled well, and gave promise of a heavy yield. Some variation in type showed.

Fallows.

Mr. J. Crowe showed two 40-acre areas of fallow. Exhibit A was placed first in the competition. The land had grown a crop of wheat in 1927. The stubble ground was ploughed 4 inches deep in July and early August, and was twice harrowed after the ploughing. Later it was spring-tooth cultivated with harrows attached to the cultivator, and afterwards the bigger portion of the land was disk-cultivated, the remainder being spring-cultivated. The results on the mulch and seed bed were relatively good and the moisture content was high. A few barley-grass plants were noticed.

Two of Mr. D. Murphy's entries of fallow were adjudged equal for second place, and two other entries by the same competitor were of a high standard. Exhibits B and C each occupied half of a 120-acre paddock; B was on the north side, and was considered to be slightly better than C. The land was ploughed in July, harrowed in October, spring-combine-cultivated in October, and later harrowed; then the 120-acre paddock was divided into three; 40 acres of B exhibit received an extra combining and rolling, and 40 acres of C were rolled. The fallows were good. The mulch had very few big lumps, and the seed bed was firm and moist, with the stubble buried beneath. Exhibit A

in a 50-acre paddock made a presentable fallow; the fourth exhibit (in Carmody's paddock) ranked with B exhibit. This land had been in wheat in 1927, and was ploughed in July, harrowed, spring-cultivated, and spike-rolled.

Details of Awards.

CROP COMPETITION.

Competitor.	Yield.	Type.	Absence of—		Evenness.	Total.
			Weeds.	Disease.		
Possible Points	35	20	15	15	15	100
D. Palmer	35	18	13	14	13	93
J. Gow	34	19	12	14	13	92
D. J. Murphy	33	18	14	14	13	92
A. T. Dobell	32	18	13	13	14	90
H. A. Dobell	34	20	9	13	12	88
G. McKay	30	19	13	13	13	88
T. McCormack	29	18	12	14	13	86
D. J. Murphy	26	19	14	14	13	86
C. Butcher	27	18	13	13	13	84
R. Perks	29	18	12	13	12	84
Adams Bros.	30	19	8	13	13	83
W. McKee	27	19	12	13	12	83
H. Holmberg (B)	25	19	12	13	14	83
D. Trewick (A)	25	19	11	14	13	82
H. Parsons	22	19	11	14	12	78
D. Trewick (B)	24	19	5	12	13	73
D. Trewick (C)	21	19	3	13	14	70
H. Holmberg (A)	21	12	12	14	11	70
D. Trewick (D)	22	19	4	14	10	69

FALLOW COMPETITION.

Competitor.	Moisture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Possible Points	25	25	25	25	100
J. Crowe (A)	24	23	24	23	94
D. J. Murphy (B)	23½	22	23½	23	92
D. J. Murphy (Carmody's)	22	23	24	23	92
W. Murphy	22	22½	24	22½	91
J. Cheatley	22	22	24	23	91
J. Crowe (B)	22	23	23½	22½	91
D. J. Murphy (C)	23½	22	23	22½	91
A. T. Dobell	24	23	23	21	91
R. Perks	21½	22	24	22½	90
D. J. Murphy (A)	22	23	23	22	90
R. Busst (B)	22	21	24	22	89
Hays and Dickens	24	21	23	20	88
Wright and Brown	23	21½	22	21½	88
D. Trewick	20	22½	23½	22	88
D. Palmer	19	21	23	20	83
R. Busst (A)	21	20	23	19	83
D. Trewick (Hunter's)	20	20	22	20	82
W. McKee	18	20	18	19	75

FALLOW AND CROP COMPETITIONS IN THE NORTH-WEST MALLEE.

Zone 3.—Walpeup, Ouyen. Galah North.

Report of the Judge, A. B. Hackwell, B.Ag.Sc., Science Field Officer.

Early in 1928 it was suggested that a fallow and crop competition between farmers throughout the whole of the North-west Mallee should be arranged. The scheme was modified whereby the district was divided into five zones, and a separate competition in each zone was instituted under the name of the North-west Mallee Fallow and Crop Competitions. For these competitions, the Royal Agricultural Society of Victoria donated five trophies (one for each zone) for the best 100 acres of fallow plus crop grown on that fallow.

It was decided that the judge of each zone competition should also judge the local fallow and crop competitions within the zone.

The report herewith deals with Zone 3 (Ouyen—Torrita), including the zone competition for the Royal Agricultural Society trophy and local competitions at Walpeup, Ouyen, and Galah North. The competitions conducted in these districts maintained their usual keenness and attracted a satisfactory number of entries despite another disappointing season. The early prospects for a bumper year were decidedly bright, for, following on the splendid autumn rains and the ideal conditions at cropping time, the crops on the whole came away well and made excellent headway. When the dry winter and early spring set in, however, the position was almost reversed, and most crops received a set-back serious enough to suggest that little more than seed would be returned. But the crops struggled on till copious rains in October relieved the situation, and the majority of them made good recovery, although at the time of judging at the end of October and early November further showers and cool weather were necessary to enable them to finish well. Unfortunately the extreme hot winds experienced immediately after judging must have given the crops another set-back and affected the yields.

In such a peculiar season unusual results were noticed. The benefit the crops derived from the late rains depended on the condition they were in when the rains fell. In many cases those sown on poor fallow and on stubble, particularly when thinly sown, remained greener longer than those on the better fallow and consequently showed decided recovery, whereas most of the crops on the better fallows, having made wonderful early growth, felt the strain more keenly over the droughty months, dried off quicker and in most cases "tipped" in the flats.

The success, therefore, that some farmers are likely to obtain this year on poor fallow, can be put down to the peculiar effects of the season, and, in view of this, intelligent farmers are not likely to abandon the practices which have stood the test of years.

The crops on the whole did well considering the abnormal season. The majority, however, were uneven, having died back in the flats. In several cases additional points were lost for unevenness owing to misses in the drilling.

In the 23 crops inspected, Sepoy, Currawa, and Ranee were the varieties most commonly sown.

Ball smut was found in three crops. In one it was particularly bad in portion of the crop on which formalin had been used, whilst even a

few infected heads were noticed in the adjacent portion that had been pickled with bluestone.

Flag smut was present in most of the crops, some of which were seriously affected. Dead heads due mainly to "take-all" were also common. These two diseases are alike in the fact that their spores or seeds stay in the soil from which the infection may take place later. Both may be controlled in the same manner, by burning the stubbles, following the affected wheat crop with oats and making a clean job of the fallow.

The competition crops were mostly sown from mid to late May with an average of 63 lb. of seed and 84 lb. of super. per acre, the manure applied varying from 55 to 100 lb.

The fallows throughout were of good standard considering the few opportunities presented for their cultivation. Some creditable exhibits were entered and competition was keen. The late rains were responsible for splendid moisture in most of the entries. As regards the amount of cultivation that should be given the fallow, it is considered that the actual number of times the fallow is worked is not as important as the manner of working and the time at which it is done. In this respect the best fallow might well be one that had been worked comparatively few times but of which a good job was made. It is apparent that some farmers attach more importance to the area fallowed than to the quality of the work.

Great interest was taken throughout the district in the fallow competition for the Royal Agricultural Society trophy, for which 23 entries were received. The awards are as follow:—

Royal Agricultural Society's Trophy—Zone 3.

100 ACRES FALLOW 1928. CROP 1929.

Points for Fallow 1928.

Competitor.	Moiature.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Maximum Points	25	25	25	25	100
R. C. F. Gniel	25	24	24	24	97
T. Hunter	24	23	24	23	94
G. Latta, senr.	24	23	24	23	94
J. O'Shannessy	24	23½	23	23	93½
J. Shelley	24	23	23½	22½	93
A. L. McGregor (1) ..	24	23	23	22	92
R. Weir	23½	22½	23½	21½	91
G. Wakefield	24	23	23	20½	90½
J. J. Gillespie	24	22	22	21	89
J. K. Glen	23	22	23	21	89
Lodwick & Sons (1) ..	23	22	23	21	89
C. J. Symes (1)	23	22	24	20	89
A. L. McGregor (2) ..	22	23	22	20	87
A. McKinnon (2)	23	22	21	21	87
W. Rose	23	22	22	20	87
Lodwick & Sons (2) ..	22	22	22	20	86
T. Bell	23	22	21	19	85
W. H. Gibbins	23	21	22	19	85
C. J. Symes (2)	23	20	23	19	85
A. McKinnon (1)	23	21	20	20	84
A. Pattinson	22	22	21	19	84
G. N. McGregor	22	21	21	19	83
C. L. Williams	22	20	19	19	80

Comments on the Fallows.

First place was awarded to the splendid fallow exhibited by Mr. R. C. F. Gniel, of Walpeup. The area had been cropped with oats last year and was ploughed up early in June with the mouldboard, harrowed twice in mid-July, then spring-toothed twice in August, once in September and twice in October.

Mr. T. Hunter (Galah North) had made a good job of an uneven paddock and was equal for second place with Mr. G. Latta, senior, with 94 points. Mr. Hunter's entry had been lay land for two years and was ploughed with the mouldboard in mid-June, harrowed July, scarified across early August, then harrowed, and spring-toothed and harrowed in October. On the occasion of the last harrowing only the lower half of the sand hills was touched.

Mr. G. Latta, senior, likewise exhibited a very creditable fallow. The area consisted of red sandy loam, ploughed from oaten stubble at the end of June, then spring-toothed once in August, in September, and in October, the harrows not being used.

A special word of appreciation is here extended to Mr. W. L. Vines, of Walpeup, the general secretary for the Royal Agricultural Society Trophy Competitions in the five zones, also secretary for Zone 3 and secretary of the local competitions at Walpeup, for his efficient organization.

The large amount of work carried out by Mr. Vines in connexion with these competitions merits the thanks and gratitude of every one concerned.

WALPEUP FALLOW AND CROP COMPETITIONS.**Conducted by the Walpeup Riding Fallow and Crop Association.**

Thirty-nine entries were received for these competitions including eight for crops and 31 for fallows. The awards were as follow:—

100 ACRES AGGREGATE FOR CROP 1928 ON FALLOW JUDGED 1927.

Competitor.	Variety.	Apparent Yield.	Purity and Type.	Absence of Weeds.	Absence of Disease.	Evenness.	Total for Crop.	Fallow Total 1927.	Grand Total, Fallow and Crop.
Maximum Points	.. .. .	35	20	15	15	15	100	100	200
R. C. F. Gniel ..	Free Gallipoli, Currawa, Rancee ..	35	19	14	14	13	95	96	191
A. L. McGregor (1)	Sepoy ..	27	15	14	14	12½	82½	91	173½
G. W. Pattinson ..	Sepoy, Bald Early ..	28	18	12	13	12	83	87	170
O. Williams ..	Sepoy, Joffre, Rancee ..	27	18	13	13	11	82	86	168
J. O'Shannessy ..	Currawa, Mogul ..	29	15½	14	12	11	81½	82	163½
A. L. McGregor (2)	Currawa ..	20	18	14	13	12	77	80	157
T. Bell ..	Sepoy, Mac's White ..	17	16	14	12	9	68	88	156
J. Holst ..	Sepoy, Rancee, Currawa	18	15	9	11	9	62	84	146

Of the eight crops inspected, Mr. R. C. F. Gniel's entry gained the highest number of points. It had been sown with Free Gallipoli (70 acres), Currawa (26 acres), and Rance (4 acres), and at the time of judging had filled nicely and promised a satisfactory yield. It, however, was uneven, having tipped in the flats; also some thinnish patches were present where the mulch had washed away with the heavy autumn rains. The purity of the seed was of high standard except for an occasional barley head. The crop was relatively free from weeds and disease, losing but a point for a few wild oats and an odd dead head.

It is of interest to note that this crop was sown on last year's winning fallow, and the aggregate for fallow and crop gave Mr. Gniel first place with 191 points. The fallow had been ploughed and harrowed in July, spring-toothed twelve times before it was combined in during mid-May, then harrowed. Sixty-five lb. of dry pickled seed and 93 lb. of super were used.

Mr. A. L. McGregor's No. 1 entry came second in the aggregate. The crop was sown early in May with Sepoy wheat at the rate of 65 lb. per acre, dry pickled, and with 95 lb. of manure. It was fairly thick and had given early promise of a heavy yield, but the unfavorable conditions were keenly felt and it had not filled as well as the winning crop. The entry was penalized also because the seed was not true to type, nor was the crop even throughout.

Mr. G. W. Pattinson's crop narrowly gained the second highest points, but the aggregate places the entry third. The crop consisted of Sepoy and Bald Early, sown in late May with 70 lb. of seed pickled with formalin and 95 lb. of super.

100 ACRES. AGGREGATE FOR FALLOW 1928 + CROP 1929.

Competitor.	Molsture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Maximum Points ..	25	25	25	25	100
R. C. F. Gniel	25	24	24	24	97
G. Latta, senr.	24	23	24	23	94
J. O'Shannessy	24	23½	23	23	93½
J. Shelley	24	23	23½	22½	93
A. L. McGregor (No. 1) ..	24	23	23	22	92
G. Wakefield	24	23	23	20½	90½
J. J. Gillespie	24	22	22	21	89
J. K. Glen	23	22	23	21	89
Lodwick & Sons (No. 1) ..	23	22	23	21	89
C. Symes (No. 1)	23	22	24	20	89
A. L. McGregor (No. 2) ..	22	23	22	20	87
A. McKinnon (No. 2) ..	23	22	21	21	87
W. Rose	23	22	22	20	87
Lodwick & Sons (No. 2) ..	22	22	22	20	86
T. Bell	23	22	21	19	85
C. Symes (No. 2)	23	20	23	19	85
A. McKinnon (No. 1) ..	23	21	20	20	84
A. Pattinson	22	22	21	19	84

Each of the eighteen fallows entered in this section competed in the Zone Trophy and received the same points in both. The entries of Mr. Gniel and Mr. G. Latta, senior, are again awarded first and second

place respectively. Mr. J. O'Shannessy came a close third with 93½ points. His paddock was a pine and heavy mallee flat, mostly of red sandy loam which had been ploughed from grass with the mouldboard in June to a depth of from 3 to 3½ in., harrowed, then scarified twice; most of it was then scarified a third time, and portion received an additional harrowing.

THE WHOLE OF COMPETITOR'S FALLOW.

Competitor.	Area Judged.	Molsture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Maximum Points	..	25	25	25	25	100
	acres.					

Section A. On First Class Land.

R. C. F. Gniel	172	25	23½	23½	24	96
Latta and Smith	400	23	23	23	22½	91½
J. K. Glen	320	22	22	23	20	87
G. Latta, senr.	500	22½	21	22½	20½	86½
G. Wakefield	560	23½	21	22	20	86½
Lodwick and Sons	300	22	22	22	20	86
C. Symes	580	23	20½	22½	19	85
A. McKinnon	400	22	21	20	19½	82½

Section B. On Second Class Land.

A. L. McGregor	350	23	23	22	21	89
A. Donald	270	22½	22	22½	20	87
G. Booley	525	23	22	22	19½	86½
A. Pattinson	220	22	22	21	19	84
T. Bell	500	23	21	20	19	83

The competition for the whole of the entrants' fallow has now been divided into two sections for which a total of thirteen entries were received this year, eight for first class land and five for second class.

The areas submitted in Section A (first class land) ranged from 172 to 580 acres, and in Section B from 220 to 525 acres.

In Section A, Mr. R. C. F. Gniel gained first place with 96 points for an exhibit of 172 acres which included the winning area in the 100-acre sections. The additional 72 acres were given one less cultivation than the successful 100 acres.

Messrs. Latta and Smith's entry of 400 acres was awarded second place, having gained 91½ points. The area was ploughed from June to August, harrowed, spring-toothed twice and portion spring-toothed again.

Third place was awarded to Mr. J. K. Glen's entry of 320 acres.

In Section B, Mr. A. L. McGregor received 89 points and obtained first place with 350 acres, 120 of which were ploughed in August, harrowed and combined in October and part again combined towards the end of October. The remainder was ploughed June-July, the flats harrowed and the whole combined once in October.

Mr. A. Donald came second with 87 points for 270 acres, and Mr. G. Booley a close third with 86½ points. Mr. Booley worked his area of 525 acres with one team only; of this 300 acres were disc ploughed, then

combined three times, and the remainder (summer fallow) was worked thrice with the combine. Several flats received two and three workings in addition. Obviously the team was kept going at high pressure, and the whole entry as an exhibit lost points for uneven depth of working, an irregular bed, and for the presence of weeds.

OUYEN FALLOW AND CROP COMPETITIONS.

Conducted by the Ouyen A. and P. Society.

Fourteen entries, including some located at Walpeup, were received for the 100 acres aggregate of fallow 1928 and crop 1929, and twelve for the 100 acres of crop. The latter competition was open for any crop, and farmers could enter their best 100 acres of crop irrespective of whether it had been grown on judged fallow or even on any fallow. Consequently this section attracted some of the best crops in the locality and competition was very keen.

BEST 100 ACRES CROP 1928.

Competitor.	Variety.	Appar- ent Yield.	Purity and Type.	Absence of—		Even- ness.	Total.
				Weeds.	Disease.		
Maximum Points ..	.. .. .	35	20	15	15	15	100
R. C. F. Gniel ..	Free Gallipoli, Currawa, Rancee	35	19	14	14	13	95
W. H. Gibbins ..	Sepoy, Currawa	32	18½	13½	13	13	90
J. Shelley ..	Joffre ..	30	18	14	14	13	89
G. Howard ..	Sepoy, Currawa	32	16	14	13	13	88
A. Wilkinson ..	Penny, Rajah ..	34	16	12	14	12	88
C. Symes ..	Penny, Gluyas ..	32	16½	13½	12	13	87
A. L. McGregor (1)	Sepoy ..	28	15	14	14	13	84
R. Weir ..	Rancee, Joffre, Currawa	28	17	13	13	12	83
J. Giles ..	Currawa, Nabawa, Sovereign	23	15½	14	14	12	78½
A. L. McGregor (2)	Currawa ..	20	18	14	13	12	77
C. Black ..	Sepoy, Joffre ..	21	18	10	14	10	73
A. McKinnon ..	Federation ..	24	17	13	9	10	73

Mr. R. C. F. Gniel exhibited the same piece of crop that was successful in the Walpeup local competition. It was also awarded first in this section.

The 50 acres of both Sepoy and Currawa entered by Mr. W. H. Gibbins received 90 points, and gained second place. It had been sown about mid-May with from 75 to 80 lb. of seed pickled with formalin, and with 90 lb. of super per acre, mostly on some winter fallow that had been four times scarified.

Mr. J. Shelley was a close third with an entry of Joffre which gained 89 points. This crop was a little later than usual, and doubt was raised as to how it would eventually fill. It was comparatively clean, with little disease, although some of the flats had slightly tipped. It was sown late in May with 60 lb. of formalin-pickled seed and 60 lb. of super. per acre.

Of the remaining entries some creditable crops were exhibited.

The Sepoy of Mr. Howard's entry, and the Penny of both Mr. Wilkinson and Mr. Symes were amongst the heaviest inspected in the district, but the presence of either weeds, disease, strangers, drill misses, &c., detracted from their appearance.

100 ACRES AGGREGATE. FALLOW 1928 + CROP 1929.

Points for Fallows 1928.

Competitor.	Molsture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Maximum Points	25	25	25	25	100
R. C. F. Gniel	25	24	24	24	97
A. L. McGregor (1) ..	24	23	23	22	92
J. R. Giles	23	22	24	22	91
R. Weir	23½	22½	23½	21½	91
J. J. Gillespie	24	22	22	21	89
Lodwick & Sons (1) ..	23	22	23	21	89
C. Symes (1)	23	22	24	20	89
A. Wilkinson	23	22	23	20	88
A. L. McGregor (2) ..	22	23	22	20	87
A. McKinnon (2)	23	22	21	21	87
J. Nairn	22	22	22	21	87
T. Bell	23	22	21	19	85
W. H. Gibbons	23	21	22	18	84
C. Black	23	21	22	19	85

The winning fallow in this section was also exhibited by Mr. R. C. F. Gniel. It was the same piece of fallow as had been successful in both the Zone Competition and the Walpeup local competition, having gained 97 points.

Mr. A. L. McGregor's No. 1 entry was placed second with 92 points. The area had been ploughed from grass in August, harrowed, then spring-toothed in October, portion receiving an additional working.

Mr. J. Giles and Mr. R. Weir shared third place with 91 points.

GALAH NORTH COMPETITION.

Conducted by the Galah North Better Farming Association.

Despite the recent disappointing seasons experienced in this district, the settlers are battling on and making the most of their resources.

The adversity of the past year was more severely reflected in the Galah North entries than elsewhere within the zone, for the crops turned out very uneven, as the flats on the whole had gone off badly. Three of the crops inspected showed many misses with the drilling. This means waste ground and the encouragement of weeds.

In all cases the competition crops had been sown with successful Mallee varieties, but the purity of the seed was often of low standard. Flag smut and dead heads were the common diseases and in one case ball smut was found.

LE COUTEUR CUP—50 ACRES AGGREGATE FALLOW 1927 + CROP 1928.

Competitor.	Variety.	Apparent Yield.	Purity and Tyl e.	Absence of Weeds.	Absence of Disease.	Evenness.	Crop Total.	Fallow Total.*	Fallow and Crop.
Maximum Points		35	20	15	15	15	100	100	200
John Bros. ..	Rance ..	30	16	14	13	11	84	93	177
K. Chisholm ..	Currawa, etc. ..	28	17	14	12	12	83	88	171
C. L. Williams ..	Sepoy ..	26	16	14	13	10	79	89	168
G. N. McGregor (1) ..	Sepoy, Ghurka ..	18	18	14	13	10	73	91	164
G. N. McGregor (2) ..	Rajah ..	19	15	13	11	10	68	88	156
T. Hunter ..	Rance ..	19	16	13	13	10	71	80	151

* Points for fallow as awarded by Mr. R. C. F. Gniel.

Messrs. John Bros.' crop of Rance obtained a total of 84 points enabling the aggregate for fallow and crop to be highest with 177 points. It is interesting to note that this crop was grown on last year's winning fallow. It was clean, short and heady, and on the average had filled well, but was uneven throughout and contained many strangers. This entry had been sown in mid-May with 60 lb. of seed, pickled with formalin, and 90 lb. of super. per acre. The tops of the sand hills were re-sown early in June.

Eighty-three points were awarded to Mr. K. Chisholm's crop, mainly of Currawa, and the aggregate came second with 171 points. Although the flats had partially failed, this crop was the most even in the section, but at the time of judging was later than the winning crop and did not promise as high a yield. Dead heads were scattered throughout this entry, which had been sown at the end of May with 60 lb. of formalin-pickled seed and 60 lb. of super. per acre.

Mr. C. L. Williams' entry of Sepoy came third. It had been combined in early May with 65 lb. of dry pickled seed and 90 lb. of super. per acre.

100 ACRES FALLOW COMPETITION.

Competitor.	Molsture.	Mulch.	Absence of Weeds.	Cultivation.	Total.
Maximum points	25	25	25	25	100
T. Hunter	24	23	24	23	94
H. MacCallum	22	22	22	20	86
G. N. McGregor	22	21	21	18	82
C. L. Williams	22	20	19	18	79
F. Le Couteur	20	19	22	17	78

Of the five entries inspected, Mr. T. Hunter obtained first place with an outstanding fallow that was awarded 94 points. This entry was also

equal second in the Zone Competition and has been commented on thereunder.

Mr. McCallum also had made a creditable job of an uneven paddock and gained second place with 86 points. Points were lost, however, on moisture and weeds and as the bed was somewhat irregular and the mulch uneven.

Of the remaining fallows Mr. G. N. McGregor led with 82 points.

ZONE 1—MERRINEE—REDCLIFFS LINE.

Report by the Judge, J. Brake, B.Ag.Sc., Senior Inspector of Agriculture.

Although over 12½ inches of rain were recorded for the Millewa district from January to October, 1928, the amount received during the period when most moisture is required by the wheat plant, and the irregularity of the falls throughout the year, caused many total or partial crop failures. Over 7 inches of rain fell in February, while only 18 points were registered for the latter part of July, August, and September. In consequence of the heavy February rains a large area of crop was sown too early. Every endeavour should be made in the Mallee to commence sowing as a general practice not earlier than, say, the 10th April, and not later than the end of May.

It is not advisable to pay much attention to the results obtained in an abnormal season such as the one just past, or, on the other hand, in a season when ideal growing weather is experienced throughout and record yields are obtained on every hand. All practice must be based on results considered over a number of years, say, five at least.

In travelling through the Mallee it becomes evident that there are a good many men who have gained valuable experience of the conditions there, and are adopting the most up-to-date and suitable methods. Unfortunately, they have passed through a sequence of dry seasons, but rapid development would appear to be assured as soon as some measure of relief is obtained from the present run of dry seasons.

Fallowing.

The preparation of the soil is of prime importance in wheat-growing, and in that connexion guidance should be looked for in the cultivation trials conducted by the Department of Agriculture at Carwarp. Notwithstanding occasional "fluke" returns from non-fallow ground, it is quite certain that, on the average, well-tended fallow is far superior to neglected fallow, and is essential for maximum production; also that fallowing as early as June means bushels more per acre than ploughing ground in September or October.

There is sufficient evidence from the various experimental plots, as well as from the experience of hundreds of farmers long established in the Mallee, to show that one real essential to the growing of payable crops is the thorough preparation of the soil by reasonable working—the actual number of workings being determined by the type of soil, the rainfall, and the number of months the paddock is under fallow.

Apart from the storing up of moisture, the preparation of a seed bed and the killing of weeds, changes are brought about in the soil by fallowing which probably enable us to avoid the use of expensive manures other than superphosphate. These changes are effected by the bacterial life in the soil, and result in the release of large quantities of plant foods which are essential to the crop.

Good fallowing conserves moisture, kills weeds, builds up a firm seed bed, and releases plant food by stimulating bacterial activity.

The Competitions.

The exhibits were scattered from Yarrara to Benetcook, and in both crops and fallows the range in quantity was very wide. There should be two classes of competition in the district, one for new land and the other for land which has been under cultivation for several years.

A new settlement like Willah, for instance, could with greater advantage conduct a small competition of its own. A judge could be obtained from amongst the older-settled farmers at Karrawinna, say, who could advise on both clearing and pioneering difficulties, as well as on actual wheat-growing methods.

The Fallows.

Twenty-one fallows were exhibited in the Fertilizer Cup section, whilst fourteen of them also competed for the prize donated by the Royal Agricultural Society to the north-western zone.

Mr. E. H. Walker, of Karrawinna, competing in both sections, showed the winning fallow with a total of 91 points. The paddock, a red loam, was ploughed with a mouldboard plough 3½ inches deep in May; Wimmera scarified in July, harrowed in October, and spring-toothed north and south in the same month. There was a nice mulch about 2½ inches deep overlying a good level seed bed, with fair to good moisture. Practically no weeds were present, and the general appearance of the paddock indicated first class workmanship.

Second place in the Fertilizer Cup was shared by a sandy new ground exhibit of Mr. J. F. McIvor's and a fairly heavy red soil fallow shown by Mr. L. Rogers, of Karrawinna South. The latter had received only two workings, having been ploughed with the mouldboard in May and combined in October. The mulch was a trifle deep, and the cultivation did not appear to have been quite so evenly performed as that of Mr. Walker. The moisture was good, however, and only one or two weeds were to be seen.

Second place in the Royal Agricultural Society's section and equal second in the Fertilizer Cup went to Mr. J. F. McIvor with 89 points. His paddock was new sandy ground. It was mouldboard-ploughed in June and July, harrowed and cultivated in August, harrowed and combined in October. It presented a good all-round appearance of careful preparation.

Mr. D. W. Rogers, fourth in the Fertilizer Cup with 88 points, showed a sandy fallow, portion of which was new ground. It was mouldboard-ploughed 2½ to 3 inches in June, combined in October, and

some of it was harrowed. The mulch was good, and ample moisture was present, but points were lost for a few weeds and a somewhat uneven seed bed.

The next half dozen fallows were not much behind the leaders in merit, but the remainder were. The last four were Willah entries on new ground just ploughed, and although the fallows looked very rough compared with the winners, the owners are to be congratulated on what they have already accomplished, and also on the progressive spirit shown in entering for the competition. It is to be hoped that next year this newer country will have a competition of its own, which, as already mentioned, would be of greater benefit to the district.

FALLOW AWARDS—FERTILIZER CUP AND ROYAL AGRICULTURAL SOCIETY'S PRIZE.

Name.	Mulch.	Moisture.	Absence of Weeds.	Cultivation.	Totals.	
					Fertilizer Cup.	R.A.S. Prize.
Possible Points	25	25	25	25	100	100
E. H. Walker	24	22	22	23	91	91
L. Rogers	22	23	23	21	89	..
J. F. McIvor	22	23	22	22	89	89
D. W. Rogers	23	23	22	20	88	..
O. C. Higgins	22	23	20	20	85	..
C. Maple	22	23	20	20	85	..
A. M. Board	22	22	20	19	83	83
F. G. Hancock	22	20	20	20	82	82
T. Dineen	22	20	20	20	82	82
C. Walkenshaw	22	19	22	19	82	82
A. W. Higgins	21	19	21	20	81	..
D. J. Callahan	22	19	20	19	80	80
R. Cameron	23	18	18	19	78	78
R. Stanbury	20	21	18	19	78	..
D. Cameron	21	19	18	19	77	77
J. Hodges	20	21	19	15	75	..
A. Priestley	20	21	18	15	74	74
W. Steane	20	18	17	17	72	72
C. W. Wallis	20	18	17	17	72	72
A. Leeder	20	18	17	17	72	72
G. Brino	20	18	17	17	72	72

The Crops.

So far as varieties are concerned, it is satisfactory that most of the wheats grown are those which have been tested out and proved to be suitable for Mallee conditions. On the average farm the number of varieties should be restricted to about four, and should include early, mid-season, and late maturing varieties. About one-sixth only of the total crop should be early maturing (sown last), such as Rajah or, for shooty country, Mac's White, whilst the remaining five-sixths could consist of mid-season and late maturing varieties (sown mid-season and early respectively), such as Rancee, Free Gallipoli, Ghurka, Sepoy, or Yandilla King.

The importance of getting the crop sown at the normal time as far as possible has already been referred to. In regard to the rate of seeding, it is interesting to note that the leading four crops this year were each sown at 50 lb. or less per acre. At the same time it must be remembered that the heavier rates of both seeding and manuring (60 lb. and 90 lb. respectively) would almost certainly give the higher yields in a comparatively wet season. As such a season has not been yet experienced since settlement commenced in this district, the use of rather lower rates for the next few years would appear to be wiser practice.

The crops varied widely, half of them being so poor that it was almost impossible to discriminate between them. Most of these apparently had carried more flag and growth before the dry spell than the limited quantity of moisture was able to carry through.

The general appearance of the crops indicated careful work with the drill. Disease was comparatively rare, although flag smut was seen in practically every crop. This fungus, like takeall, is usually carried over in the soil from a previous crop; it is characterized by black streaks appearing along the infected leaves, and the leaves curling and twisting up. The remedy lies in clean farming—burning stubbles, good fallowing, and growing oats in rotation with wheat.

Pickling to Prevent Ball Smut.

Dry pickling for the prevention of ball smut appears to be well established. Out of thirteen competitors questioned on the matter only one uses bluestone and three formalin, while nine use dry copper powder.

Mr. D. W. Rogers carried off first place with a crop of Federation, which promised so well that it was given full marks for yield. It was sown in the first and third weeks of May. It was well drilled and free from weeds; and while flag smut was rather prevalent the type was quite true, and there were no strangers present.

Mr. James Hodges, of Karrawinna South, was second with a crop consisting of three varieties, Currawa, Free Gallipoli and Hard Federation. Flag smut was not so prevalent as in the winning crop, but its yield would be probably a couple of bushels per acre less than that of Mr. Rogers'.

At the Yarrara end of the district the best crop was that of Mr. F. Crichton, who showed Sepoy, Joffre, Rancee, Rajah, and Mac's White, on last year's second prize fallow. The varieties were sown at 60 lb. per acre, with 90 lb. superphosphate. Although the yield was reduced by the dry season the crops displayed workmanship, the wheats being pure, true to type, and methodically set out.

It will be noticed that the winning fallow of Mr. J. Smith, Pirlta, failed completely to grow a crop, occupying a position equal last in the competition. The fallow was well prepared, and Mr. Smith sowed 60 lb. of dry pickled seed and 70 lb. of superphosphate on the 20th April. Apparently this was another case where a good fallow sown early with fairly heavy seed and superphosphate produced a luxuriant crop which was unable to get sufficient moisture for its requirements, and consequently died out before the October rains came.

CROP AWARDS—SUTHERLAND AND FERTILIZER CUPS.

Competitor.	Variety.	Seed.	Super.	Pickle.	Yield.	Type.	Absence of Disease.	Absence of Weeds.	Evenness.	Totals.
Possible Points	.. ..	..	..	..	35	20	15	15	15	100
D. W. Rogers ..	Federation ..	lb. part 30	lb. 30	Dry ..	35	19	13	14	14	95
J. Hodges ..	Currawa, Free Gallipoli, Hard Federation	42	50	Dry ..	32	19	14	14	14	93
E. H. Walker ..	Sepoy ..	50	50	Formalin	28	19	14	14	14	89
G. W. Simmonds	Rajah ..	50	50	Dry ..	28	19	14	14	13	88
A. W. Higgins..	Free Gallipoli, Rancee	60	120	Dry ..	30	17	14	13	14	88
F. Crichton ..	Sepoy, Joffre, Rancee, Rajah, Mac's White	60	90	Dry ..	18	19	14	14	15	80
J. F. McIvor ..	Federation, Currawa, Maj., Sepoy	..	..	Bluestone	18	19	14	13	13	77
L. Rogers ..	Federation ..	..	..	..	18	15	14	14	14	75
O. C. Higgins ..	Nizam, Federation ..	60	90	Dry ..	14	15	14	12	14	69
C. Maple ..	Hard Federation ..	60	90	Dry ..	12	15	14	14	14	69
R. Stanbury ..	Rancee ..	60	90	Dry ..	14	15	13	13	12	67
C. M. Boxall ..	Gluyas ..	50	45	Formalin	8	18	14	14	13	67
W. G. Simmonds	Penny ..	50	50	Dry ..	8	18	14	13	13	66
G. Dickerson ..	Graham ..	45	60	Formalin	8	18	12	14	14	66
T. Dineen (1) ..	..	..	..	..	4	18	13	14	13	62
T. Dineen (2) ..	..	..	..	..	4	18	13	14	13	62
G. Wakenshaw..	..	..	..	..	4	18	14	13	13	62
J. Smith ..	Free Gallipoli ..	60	70	Dry ..	4	18	14	13	13	62

HOME UTILIZATION OF FRUITS IN SEASON,

By Miss A. Knight, Fruit Preserving Expert.

Either preserved or fresh fruits may be used in most of the following simple preparations. It is sometimes preferred to work in two varieties of fruit when making up certain dishes. For instance, blackberry and apple are commonly used, while other suitable blends are raspberry and red currant, black and red currant, loganberry and raspberry, dark blue plums and mulberries, yellow-fleshed peach and pineapple, yellow peach and plums, quince and apple, pear and passion fruit. There are many other mixtures of fruits which blend very well for nearly all purposes, and are generally liked. Raspberries and red currants make a nice "hot-day" sweet made from these fruits. To make it, take a box of fresh raspberries, and about half a pound of ripe red currants. Pick over the raspberries, and if they require rinsing, rinse them quickly and drain them immediately. (If left in the water, the juice will be drawn from them.) Then put them into a china bowl. Rinse the bunches of red currants, and when drained, strip the berries from the stalks, into a basin, and crush them so as to extract the juice, which should then be strained over the raspberries in the bowl. Meanwhile,

boil three tablespoons of sugar, in about half a cup of water, and when a clear syrup has formed, pour it over the fruit and juice; then stand it away in a very cool place. If possible, put in an ice chest for a couple of hours or so before it is required. Serve it with a little ice cream, or plain cream, as preferred.

A wholesome sweet suitable for present use may be made from either bottled, tinned, or fresh ripe apricots. To make it one requires about—

- 1 lb. of fully ripe apricots
- 4 medium sized bananas
- 2 tablespoons of sugar
- 2 teaspoons of lemon juice

Skin and stone the apricots and put them into a basin and mash with a fork; mix the sugar and lemon juice through them. Peel and slice the bananas, and put into custard glasses. About half fill the custard glasses with the banana; then cover with the prepared apricot. Mask with cream, and serve very cold.

Another sweet can be made from passion fruit—

Allow 18 passion fruits (the black variety is the best for the purpose)

- 1 oz. of gelatine
- $\frac{1}{4}$ cup of sugar
- 3 cups of water
- 2 teaspoons of lemon juice.

Dissolve the gelatine in one cup of the water, and boil the sugar rapidly in the rest of the water for fifteen minutes. In the meantime, extract the passion fruit pulp from the shells, and strain the seeds from it by pressing through a piece of muslin. Mix the strained pulp and lemon juice with the syrup, then add this to the prepared gelatine. Stir it for a few minutes and pour into wet moulds. Allow it to set, and serve with a little cream.

Tomatoes are now plentiful, and from either the fresh ripe tomatoes or the bottled tomato pulp, this tasty sandwich filling can be prepared—

Take about 1 lb. of ripe tomatoes or tomato pulp

- 1 breakfast cup of bread-crumbs
- $\frac{1}{4}$ lb. mild cheese (grated).
- 1 tablespoon butter
- A little grated onion or a little onion juice
- 2 eggs
- Salt and pepper to taste.

The method of preparing this filling is to scald, peel, and cut up the tomatoes. Put them in a saucepan with the butter, pepper, salt, and onion, and allow them to boil for ten minutes or so; then add the grated cheese, breadcrumbs, and the well-beaten eggs. Simmer slowly till the mixture thickens, stirring it well. Then turn it into small dry jars. Coat the surface with some melted butter, and seal the jar. This is an ideal preparation for lunch sandwiches, and if put into small containers, can be easily carried in the lunch case, and used as required.

A summer drink that is appreciated by many children can be made from ripe loganberries. Dissolve $2\frac{1}{2}$ ozs. of tartaric acid in 1 quart of boiling water, and when the acid is quite dissolved, pour the liquid over

6 lb. of fresh ripe loganberries, and allow them to remain in it overnight. Next day strain and measure the liquid. Allow $1\frac{1}{2}$ lb. sugar to each pint of juice, and when the sugar is all dissolved, strain through a cheese cloth, and bottle off ready for use. This makes a pleasing drink if diluted with soda water or mineral water, but if preferred, pure water may be used with it. A drink made in the same way from raspberries will also be found very nice.

A nice fruit sweet can be made from—

- 1 cup of brown sugar
- 1 cup of white sugar
- 3 tablespoons of butter
- 1 tablespoon of maize syrup
- $\frac{2}{3}$ of a cup of milk
- $\frac{1}{2}$ cup of stoned raisins
- $\frac{1}{2}$ cup of chopped dried figs
- Vanilla flavoring.

Melt the butter, add the sugar, maize syrup, and milk. Stir until boiling heat is reached, then cook without stirring till it reaches 238 deg. F. It is then ready to pour on to a platter. Leave till it cools, then turn it about till it begins to get firm, then add the fruit and flavouring, and work them well into the mixture. When this is done shape into flat blocks about $\frac{1}{2}$ an inch thick, and cut into squares.

Another sweet can be prepared from—

- 1 cup of sugar
- $\frac{1}{2}$ cup of water
- 2 tablespoons of maize syrup
- 1 egg white (beaten stiff)
- $\frac{1}{2}$ cup of mixed raisins and nuts.

Cook the sugar, maize syrup and water to 252 deg. F.; then add to it slowly the beaten egg white. Continue to beat the mixture until it is stiff, and then mix in the fruit and nuts. Turn on to an oiled platter; and when set cut into convenient sizes, and dip into melted milk chocolate, or use just as it is.



ARTIFICIAL FERTILIZERS REGISTERED FOR 1929

(as required by the Fertilizers Act 1915).

The Artificial Fertilizers Act imposes certain obligations on the manufacturer and importer of artificial fertilizers. Among the most important are—(a) registration of brands; (b) supplying invoice certificates on sale of a brand of fertilizer; and (c) labelling of every package.

What is a Fertilizer.

The definition under the Act is any material containing nitrogen, phosphoric acid, or potash, which has been manufactured, prepared, or produced in any manner for the purpose of fertilizing the soil or supplying nutriment to the plant, but does not include farm-yard or stable manure, or any crude night soil, crude offal, or other unmanufactured refuse.

Registration of Brands.

All manufacturers or importers of fertilizers who intend offering for sale any such material as above defined, shall, on or before the first day of November in each year, make an application to the Director of Agriculture for the registration of a brand for each of such fertilizers. All applications must set forth, on the prescribed form, the name and place of business of the applicant, the brand to be associated with the fertilizer, and an analysis of the fertilizer, stating the percentage of each fertilizing ingredient, and the respective form or forms in which they occur, and the retail price per ton of the fertilizer at headquarters.

Invoice Certificate.

If not at time of sale, then before delivery of any fertilizer, the vendor shall give the purchaser an invoice certificate in the form prescribed by the Act, stating the name of the seller, the name of the buyer, the weight purchased, the name and brand of the fertilizer, and the percentage of nitrogen, phosphoric acid, and potash, and the forms in which they occur in the fertilizer. It is essential that the purchaser should not only obtain but keep the invoice certificate covering each lot of fertilizer purchased, it being the seller's guarantee of the fertilizer sold, and in the case of any dispute as to quality the production of the invoice certificate is essential.

Labelling.

Every parcel of fertilizer sold should have a plainly printed label securely affixed to such parcel, showing clearly and truly the name of manufacturer, the registered brand, the analysis stating the percentage of nitrogen, phosphoric acid, and potash, and the respective forms in which they occur in the fertilizer, and the nett weight of the fertilizer in the parcel.

Unit Values.

The unit value is the value of 1 per cent. of nitrogen, phosphoric acid, or potash in one ton of fertilizer.

The unit value may serve a useful purpose if put into application. The value of any brand can be calculated only on the fertilizer constituents guaranteed by the vendor. To apply the unit values, the buyer must first ascertain what the seller guarantees, and by multiplying the percentage of the ingredient by the unit value given in table for the form in which it is present, he will be able to arrive at its commercial value.

By way of illustration the following examples are given:—

Blood and Bone Fertilizer.

Guaranteed to contain—					
Nitrogen as blood and bone	..	..	..	..	5.47%
Phosphoric acid, citrate soluble	..	..	..	..	5.44%
Phosphoric acid, citrate, insoluble	..	..	..	..	8.10%
Phosphoric acid, total	..	..	..	..	13.54%
Nitrogen as blood and bone, unit value	..	..	..	£1 3 3	
Phosphoric acid as citrate soluble, unit value	..	..	..	0 5 6	
Phosphoric acid as citrate insoluble, unit value	..	..	..	0 5 0	
Percentage of Constituent x Unit Value.					
Nitrogen	..	..	5.47% x	£1 3 3 =	6 7 3
Phosphoric acid	..	..	5.44% x	0 5 6 =	1 9 11
Phosphoric acid	..	..	8.10% x	0 5 0 =	2 0 6
Value per ton	..	..	..	..	£9 17 8

Bonedust.

Guaranteed to contain—					
Nitrogen as bone	..	..	..	..	3.73%
Phosphoric acid	..	..	..	..	19.50%
Mechanical condition—					
Fine bone	..	..	..	..	38.50%
Coarse bone	..	..	..	..	61.50%
The nitrogen as fine bone	..	3.73% x	38.50 =	1.43%	
The nitrogen as coarse bone	..	3.73% x	61.50 =	2.30%	
The phosphoric acid as fine bone	..	19.50% x	38.50 =	7.50%	
The phosphoric acid as coarse bone	..	19.50% x	61.50 =	12.00%	
Nitrogen as fine bone, unit value	..	..	..	£1 3 3	
Nitrogen as coarse bone, unit value	..	..	..	1 0 0	
Phosphoric acid as fine bone, unit value	..	..	..	0 5 6	
Phosphoric acid as coarse bone, unit value	..	..	..	0 5 0	
Percentage of Constituent x Unit Value.					
Nitrogen as fine bone	..	1.43 x	£1 3 3 =	£1 13 3	
Nitrogen as coarse bone	..	2.30 x	1 0 0 =	2 6 0	
Phosphoric acid as fine bone	..	7.50 x	0 5 6 =	2 1 3	
Phosphoric acid as coarse bone	..	12.00 x	0 5 0 =	3 0 0	
Value per ton	..	..	..	..	£9 0 6

Fertilizers Act 1915.

LIST OF UNIT VALUES FOR THE YEAR 1929.

							£	s.	d.
Nitrogen, as Blood	..	..	..	..	..	.. per unit			
„ as Blood and Bone	..	..	..	..	..	..	}	1	3 3
„ as Bone and Flesh	..	..	..	..	..	..			
„ as Fine Bone	..	..	..	..	..	..			
„ as Coarse Bone	..	..	..	..	..	..		1	0 0
„ as Nitrate	..	..	..	..	..	..		0	19 6
„ as Urea	..	..	..	..	..	..		0	18 6
„ as Ammonia	..	..	..	..	..	..		0	15 9
Phosphoric Acid—									
as Water Soluble	..	..	..	..	..	..		0	4 10
as Citrate Soluble—									
in Blood and Bone	..	..	..	..	..	..	}	0	5 6
in Animal Fertilizer	..	..	..	..	..	..			
in Bone Fertilizer	..	..	..	..	..	..			
as Fine Bone	..	..	..	..	..	..			
in Blood, Bone, and Super	..	..	..	..	..	..			
in Bone and Super	..	..	..	..	..	..			
in Super and Bone	..	..	..	..	..	..		0	5 0
in Market Garden Manure	..	..	..	..	..	..			
in Complete Manure, No. 3 and No. 4	..	..	..	..	..	..			
in Cresco mixed, No. 2	..	..	..	..	..	..			
in Other Fertilizers	..	..	..	..	..	..		0	4 10
as Citrate Insoluble—									
in Blood and Bone	..	..	..	..	..	..	}	0	5 0
in Animal Fertilizer	..	..	..	..	..	..			
in Bone Fertilizer	..	..	..	..	..	..			
as Coarse Bone	..	..	..	..	..	..			
in Blood, Bone and Super	..	..	..	..	..	..			
in Super and Bone	..	..	..	..	..	..			
in Bone and Super	..	..	..	..	..	..		0	3 10
in Market Garden Manure	..	..	..	..	..	..			
in Complete No. 3, and No. 4	..	..	..	..	..	..			
in Cresco No. 2	..	..	..	..	..	..			
in Super and Phosphate	..	..	..	..	..	..			
in Basic Phosphate	..	..	..	..	..	..			
in Ground Phosphate	..	..	..	..	..	..		0	2 9
in Ammonia and Phosphate	..	..	..	..	..	..			
in Cresco Mixed	..	..	..	..	..	..			
in Phosphate Guano and Super	..	..	..	..	..	..			
in other Fertilizers	..	..	..	..	..	..		0	1 0
Potash, as Sulphate	..	..	..	..	..	..		0	5 11
„ as Muriate	..	..	..	..	..	..		0	4 9

P. RANKIN SCOTT,

Chemist for Agriculture.

Melbourne, 1st December, 1928.

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE
FERTILIZERS ACT 1915 (No. 2652) FOR THE YEAR 1929.

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.	Where Obtainable.	
		As Nitrate.	As Ammonia.	As Blood.	As Bone and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.				
<i>Nitrogenous, Readily Soluble.</i>															
Nitrate of Soda	Cresco	..	15'00	..	..	..	15'00	..	..	..	..	14 12 6	Cresco Fertilizers Ltd., North Geelong		
"	Sickle	..	15'50	..	..	..	15'50	..	..	..	..	15 0 0	Cumins, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne		
"	M.L. in diamond	..	15'50	..	..	..	15'50	..	..	..	..	15 0 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne		
"	Federal, S.N.	..	15'50	..	..	..	15'50	..	..	..	..	15 0 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne		
"	Pivot	..	15'50	..	..	..	15'50	..	..	..	..	15 10 0	The Phosphate Co-op. Co. of Australia Ltd., 440 Little Collins-street, Melbourne		
"	Wischer and Co. Pty. Ltd.	..	15'50	..	..	..	15'50	..	..	..	..	15 0 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne		
<i>Sulphate of Ammonia</i>															
"	Cresco	..	20'00	..	..	..	20'00	..	..	..	..	16 11 6	Cresco Fertilizers Ltd., North Geelong		
"	Sickle	..	20'00	..	..	..	20'00	..	..	..	..	15 15 0	Cumins, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne		
"	M.G. Co. in diamond	..	20'59	..	..	..	20'59	..	..	..	..	15 5 0	The Metropolitan Gas Co., Flinders-street, Melbourne		
"	M.L. in diamond	..	20'00	..	..	..	20'00	..	..	..	..	15 15 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne		
"	Federal, A.S.	..	20'00	..	..	..	20'00	..	..	..	..	15 15 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne		
"	Pivot	..	20'00	..	..	..	20'00	..	..	..	..	15 15 0	The Phosphate Co-op. Co. of Australia Ltd., 440 Little Collins-street, Melbourne		

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652)
FOR THE YEAR 1929—continued.

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid				Potash.	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
<i>Nitrogenous. Readily Soluble—continued.</i>													£ s. d.	
Sulphate of Ammonia..	Wischer and Co. Pty. Ltd.	..	20'00	..	..	..	20'00	..	..	..	..	..	15 15 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
Urea	BA over ST, in circle	..	..	..	..	..	46'00 (as Urea)	..	..	..	..	..	42 10 0	Dyes and Chemicals (Aust.) Ltd., 573-585 Lonsdale-street, Melbourne
<i>Moderately Soluble.</i>														
Dried Blood	Imperial ..	..	..	11'75	..	..	11'75	..	..	..	0'75	0'50	12 0 0	W. Angles and Co. Pty. Ltd., 42 Bourke-street, Melbourne
Blood Manure ..	Cockhill ..	..	..	8'50	..	..	8'50	..	..	..	1'00	..	8 10 0	J. Cockhill, 407 Post Office-place, Melbourne
"	Sickle ..	..	..	7'50	..	..	7'50	..	..	..	..	..	9 5 0	Cunning, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
"	Pannifex's ..	..	..	11'00	..	..	11'00	..	..	..	0'50	1'10	16 0 0	H. C. Pannifex, 26 Market-street, Melbourne
"	Federal ..	..	..	7'50	..	..	7'50	..	..	..	..	..	9 5 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
"	M.L. in diamond ..	..	..	7'50	..	..	7'50	..	..	..	..	..	9 5 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
"	Wischer and Co. Pty. Ltd.,	..	..	7'50	..	..	7'50	..	..	..	..	..	9 5 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
"	M.C.C. in diamond ..	..	..	8'02	..	..	8'02	..	..	..	1'25	0'61	8 0 0	Melbourne City Council, Town Hall, Melbourne
Castor Meal	Alba ..	..	..	..	..	..	5'00 (as organic)	..	..	..	2'00	2'00	5 10 0	Lycett Pty. Ltd., Normantyre-road, Montague

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652)
FOR THE YEAR 1929—continued.

Description of Fertilizer.	Brand.	Nitrogen.					Phosphoric Acid.				Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.		
<i>Phosphatic, readily soluble.</i>												
Superphosphate	Cockbill's, 22%	..	..	..	..	..	20.50	0.50	1.00	22.00	£ 5 5 0	J. Cockhill, 407 Post Office-place, Melbourne
"	Cresco, 22	..	..	..	..	..	20.50	0.50	1.00	22.00	4 17 6	Cresco Fertilizers Ltd., North Geelong
"	Sickle Florida, 22%	..	..	..	..	..	20.50	0.50	1.00	22.00	5 5 0	Cuning, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
"	M.L. in diamond, 22%	..	..	..	..	..	20.50	0.50	1.00	22.00	5 5 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
"	Federal, 22%	..	..	..	..	..	20.50	0.50	1.00	22.00	5 5 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
"	Pivot, 22%	..	..	..	..	..	20.50	0.50	1.00	22.00	5 5 0	The Phosphate Co-op. Co. of Australia Ltd., 440 Little Collins-street, Melbourne
"	Wischer and Co. Pty. Ltd., 22%	..	..	..	..	..	20.50	0.50	1.00	22.00	5 5 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
"	Cresco, 24	..	..	..	..	..	22.00	0.50	1.50	24.00	5 2 4	Cresco Fertilizers Ltd., North Geelong
"	Sickle Florida, 24%	..	..	..	..	..	22.00	0.50	1.50	24.00	5 10 0	Cuning, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
"	M.L. in diamond, 24%	..	..	..	..	..	22.00	0.50	1.50	24.00	5 10 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
"	Federal, 24%	..	..	..	..	..	22.00	0.50	1.50	24.00	5 10 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
"	Pivot, 24%	..	..	..	..	..	22.00	0.50	1.50	24.00	5 10 0	The Phosphate Co-op. Co. of Australia Ltd., 440 Little Collins-street, Melbourne
"	Wischer and Co. Pty. Ltd., 24%	..	..	..	..	..	22.00	0.50	1.50	24.00	5 10 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652)
FOR THE YEAR 1929—continued.

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
<i>Phosphatic—continued.</i>														
<i>Moderately Soluble.</i>														
Super and Phosphate ..	Cresco, 50/50	..	..	..	..	..	..	9'16	1'84	17'40	28'40	..	£ 4 17 6	Cresco Fertilizers Ltd., North Geelong
" ..	Sickle ..	..	..	..	..	..	..	10'00	0'50	18'50	29'00	..	5 7 6	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
" ..	M.L. in diamond	..	..	..	..	..	..	10'00	0'50	18'50	29'00	..	5 7 6	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
" ..	Federal (half and half)	..	..	..	..	..	..	10'00	0'50	18'50	29'00	..	5 7 6	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
" ..	Wischer and Co. Pty. Ltd.	..	..	..	..	..	..	10'00	0'50	18'50	29'00	..	5 7 6	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
" ..	Cresco Phosphate Guano and Super	..	..	..	..	..	..	7'30	5'50	10'05	22'85	..	4 17 6	Cresco Fertilizers Ltd., North Geelong
Basic Phosphate	Sickle ..	..	..	..	..	..	..	..	15'50	3'20	18'70	..	5 10 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
" ..	M.L. in diamond	..	..	..	..	..	..	..	15'50	3'20	18'70	..	5 10 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
" ..	Federal B.P. ..	..	..	..	..	..	..	..	15'50	3'20	18'70	..	5 10 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
" ..	Pivot ..	..	..	..	..	..	..	..	15'50	3'20	18'70	..	5 10 0	The Phosphate Co-op. Co. of Australia Ltd., 440 Collins-street, Melbourne
" ..	Wischer and Co. Pty. Ltd.	..	..	..	..	..	..	..	15'50	3'20	18'70	..	5 10 0	Wischer and Co. Pty. Ltd., 449 Little Collins-street, Melbourne

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652)
FOR THE YEAR 1929—continued.

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.	Where Obtainable.		
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.					
<i>Phosphatic—contin ed.</i>																
<i>Slowly Soluble.</i>																
Ground Phosphate	Cresco, 76%	..	..	..	..	..	..	..	..	..	34'80	34'80	..	4 15 0	Cresco Fertilizers Ltd., North Geelong	
"	Sickle, 80%	..	..	..	..	..	..	..	..	..	36'65	36'65	..	5 0 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne	
"	M.L. in diamond, 80%	..	..	..	..	..	..	..	..	..	36'65	36'65	..	5 0 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne	
"	Pivot, 80%..	..	..	..	..	..	..	..	..	..	36'65	36'65	..	5 0 0	The Phosphate Co-op. Co. of Australia Ltd., 440 Little Collins-street, Melbourne	
"	Federal G.P., 80%	..	..	..	..	..	..	..	..	..	36'65	36'65	..	5 0 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne	
"	Wischer and Co. Pty. Ltd., 80%	..	..	..	..	..	..	..	..	..	36'65	36'65	..	5 0 0	Wischer and Co. Pty. Ltd., 449 Little Collins-street, Melbourne	
<i>Potassic.</i>																
<i>Readily Soluble.</i>																
Muriate of Potash	Cresco	..	..	..	..	..	..	..	..	..	..	..	50'00	11 14 0	Cresco Fertilizers Ltd., North Geelong	
"	Sickle	..	..	..	..	..	..	..	..	..	..	..	50'00	12 0 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne	
"	M.L. in diamond	..	..	..	..	..	..	..	..	..	..	..	50'00	12 0 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne	
"	Federal	..	..	..	..	..	..	..	..	..	..	..	50'00	12 0 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne	
"	Wischer and Co. Pty. Ltd.	..	..	..	..	..	..	..	..	..	..	..	50'00	12 0 0	Wischer and Co. Pty. Ltd., 449 Little Collins-street, Melbourne	

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1916 (No. 2652)
FOR THE YEAR 1929—continued.

Description of Fertilizer.	Brand.	Nitrogen						Phosphoric Acid.				Potash.	Price asked per ton.			Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Flesh and Bone.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.		£	s.	d.	
<i>Potassic - readily Soluble</i> —continued.																
Sulphate of Potash	Cresco	..	..	..	..	..	..	..	..	..	..	48'50	14	2	9	Cresco Fertilizers Ltd., North Geelong
"	Sickle	..	..	..	..	..	..	..	..	..	..	48'50	14	10	0	Cunning, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
"	M.L. in diamond	..	..	..	..	..	..	..	..	..	..	48'50	14	10	0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
"	Federal	..	..	..	..	..	..	..	..	..	..	48'50	14	10	0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
"	Pivot	..	..	..	..	..	..	..	..	..	..	48'50	14	10	0	The Phosphate Co-op. Co. of Australia Ltd., 440 Little Collins-street, Melbourne
"	Wischer and Co. Pty. Ltd.	..	..	..	..	..	..	..	..	..	..	48'50	14	10	0	Wischer and Co. Pty Ltd., 449 Little Collins-street, Melbourne
<i>Containing Nitrogen and Phosphoric Acid. Readily Soluble.</i>																
Super and Ammonia	Sickle	..	2'85	..	..	..	2'85	17'48	0'42	0'85	18'75	..	7	10	0	Cunning, Smith, and Co. Pty., Ltd., 65 William-street, Melbourne
"	M.L. in diamond	..	2'85	..	..	..	2'85	17'48	0'42	0'85	18'75	..	7	10	0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
"	Federal, 6 and 1	..	2'85	..	..	..	2'85	17'48	0'42	0'85	18'75	..	7	10	0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
"	Wischer and Co. Pty. Ltd.	..	2'85	..	..	..	2'85	17'48	0'42	0'85	18'75	..	7	10	0	Wischer and Co. Pty. Ltd., 449 Little Collins-street, Melbourne

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652)
FOR THE YEAR 1929—continued.

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.			Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.		
<i>Containing Nitrogen and Phosphoric Acid—Readily Soluble—continued.</i>												
Nitro-Superphosphate ..	Sickle ..	..	1.50	..	0.50	..	2.00	16.39	1.10	1.70	19.19	£ s. d. 7 2 6
" ..	M.L. in diamond ..	..	1.50	..	0.50	..	2.00	16.39	1.10	1.70	19.19	7 2 6
" ..	Federal N.S. ..	..	1.50	..	0.50	..	2.00	16.39	1.10	1.70	19.19	7 2 6
" ..	Wischer and Co. Pty. Ltd. ..	..	1.50	..	0.50	..	2.00	16.39	1.10	1.70	19.19	7 2 6
Diammonphos I.G. ..	B.A. over SF in circle ..	..	20.60	..	..	..	20.60	32.50	..	..	32.50	34 10 0
<i>Moderately Soluble.</i>												
Ammonia and Phosphate ..	Cresco ..	..	2.00	..	..	..	2.00	8.30	1.60	15.70	25.60	6 6 9
Blood, Bone and Super ..	Cockbill's ..	..	..	2.50	..	..	2.50	11.28	1.63	4.63	17.54	7 12 6
" ..	Sickle ..	..	..	2.50	..	..	2.50	11.28	1.47	4.18	16.93	7 12 6
" ..	M.L. in diamond ..	..	..	2.50	..	..	2.50	11.28	1.47	4.18	16.93	7 12 6
" ..	Federal B.B.S. ..	..	..	2.50	..	..	2.50	11.28	1.47	4.18	16.93	7 12 6
" ..	Wischer and Co. Pty. Ltd. ..	..	..	2.50	..	..	2.50	11.28	1.47	4.18	16.93	7 12 6

Cumming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
Wischer and Co. Pty. Ltd., 449 Little Collins-street, Melbourne
Dyes and Chemicals (Aust.) Ltd., 573-585 Lonsdale-street, Melbourne

Cresco Fertilizers Ltd., North Geelong
J. Cockbill, 497 Post Office-place, Melbourne
Cumming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
Wischer and Co. Pty. Ltd., 449 Little Collins-street, Melbourne

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652)
FOR THE YEAR 1929—continued.

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash.	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
<i>Containing Nitrogen, and Phosphoric Acid—Moderately Soluble—continued.</i>														
Bone and Super	Sickle "A"	..	..	..	..	2'00	2'00	11'01	2'67	5'91	19'59	..	£ 17 6	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
"	M.L. in diamond, No. 1	..	..	..	..	2'00	2'00	11'01	2'67	5'91	19'59	..	7 17 6	Mr. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
"	Federal B.S. 1	..	..	..	..	2'00	2'00	11'01	2'67	5'91	19'59	..	7 17 6	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
"	Wischer and Co. Pty. Ltd., No. 1	..	..	..	..	2'00	2'00	11'01	2'67	5'91	19'59	..	7 17 6	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
"	Cresco	..	..	..	..	2'00	2'00	9'50	3'90	3'00	16'40	..	7 18 6	Cresco Fertilizers Ltd., North Geelong
Bone Fertilizer and Super	Elsworth's	..	..	..	..	1'50	1'50	11'0	2'50	5'00	18'50	..	6 10 0	William Roberts Elsworth, cr. York and Joseph-streets, Ballarat East
Super and Bone	Sickle, mixed C	..	..	..	..	1'00	1'00	15'75	1'58	3'46	20'79	..	6 17 6	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
"	M.L. in diamond, No. 2	..	..	..	..	1'00	1'00	15'75	1'58	3'46	20'79	..	6 17 6	Mr. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
"	Federal, S.B.	..	..	..	..	1'00	1'00	15'75	1'58	3'46	20'79	..	6 17 6	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
"	Wischer and Co. Pty. Ltd., No. 2	..	..	..	..	1'00	1'00	15'75	1'58	3'46	20'79	..	6 17 6	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652)
FOR THE YEAR 1929—continued.

Description of Fertilizer.	Brand.	Nitrogen.				Phosphoric Acid.				Potash (Sulphate).	Price asked per ton.	Where obtainable.	
		As Nitrate.	As Ammonia.	As Blood.	As Iodine and As Iodine and Plesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.				Total.
<i>Containing Nitrogen and Phosphoric Acid—Moderately Soluble—continued.</i>													
Blood and Bone	Imperial	..	..	..	4.75	..	5.00	12.00	17.00	..	9 0 0	W. Angless and Co. Pty. Ltd., 42 Bourke-street, Melbourne	
"	T.B. and S. in diamond, Lighthouse	..	..	..	5.47	..	4.46	7.19	11.65	..	9 0 0	Thomas Borthwick and Sons (Australasia) Ltd., 84 William-street, Melbourne	
"	Cockbill's	..	..	..	5.25	..	3.00	9.00	12.00	..	10 0 0	J. Cockbill, 407 Post Office-place, Melbourne	
"	Cresco	..	..	..	5.00	..	3.00	11.50	14.50	..	10 14 6	Cresco Fertilizers Ltd., North Geelong	
"	Arch	..	..	..	6.39	..	4.86	7.26	12.12	..	11 0 0	Amalgamated Freezing Co. (Vic.) Pty. Ltd., 499 Little Collins-street, Melbourne	
"	Sickle	..	..	..	5.00	..	6.00	10.00	16.00	..	10 10 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne	
"	Fitzgerald's	..	..	..	4.30	..	6.32	10.69	17.01	..	9 10 0	P. Fitzgerald and Sons, Warrigal-road, Oakleigh	
"	D.B.C. in triangle	..	..	..	5.00	..	4.00	6.00	10.00	..	8 10 0	Gippsland Co-op. Bacon Curing Co. Ltd., Dandenong	
"	King's, Geelong	..	..	..	5.00	..	6.90	8.60	15.50	..	10 0 0	Joseph C. King and Sons Pty. Ltd., Little Pyans-street, South Geelong; and Marshall, Thomas A. Mills, Spec Gully, Golden Square	
"	Eclipse	..	..	..	4.42	..	5.88	8.46	14.34	..	8 0 0	Thomas A. Mills, Spec Gully, Golden Square	
"	M.L. in diamond	..	..	..	5.00	..	6.00	10.00	16.00	..	10 10 0	Mt Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne	
"	Federal B.B.	..	..	..	5.00	..	6.00	10.00	16.00	..	10 10 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne	

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2052)
FOR THE YEAR 1929—continued.

Description of Fertilizer.	Brand.	Nitrogen.					Phosphoric Acid.				Potash (Sulphate).	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Insoluble.	Total.		
		%	%	%	%	%	%	%	%	%	%		
Containing Nitrogen and Phosphoric Acid. Moderately Soluble—continued.													
Blood and Bone—continued	Pannifex's No. 1	..	..	..	6.75	..	6.75	..	5.00	7.00	12.00	11 5 0	H. C. Pannifex and Co., 26 Market-street, Melbourne
"	Pannifex's No. 2	..	..	..	7.17	..	7.17	..	5.00	6.99	11.99	11 10 0	" "
"	Pannifex's No. 3	..	..	..	7.65	..	7.65	..	5.00	7.15	12.15	11 15 0	W. Pridham Pty. Ltd., Evans-street, Braybrook
"	Pridham's ..	..	..	..	5.82	..	5.82	..	0.30	6.70	16.00	9 10 0	P. Rohs Pty. Ltd., Bridge-street, Bendigo
"	Rohs in circle	..	..	..	6.00	..	6.00	..	4.00	9.00	13.00	11 0 0	Western and Murray Co-op. Bacon and Meat Packing Co., Geelong-road, West Braybrook
"	W.M. in circle	..	..	..	6.00	..	6.00	..	4.50	5.50	10.00	11 10 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
"	Wischer and Co. Pty. Ltd.	..	..	..	5.00	..	5.00	..	6.00	10.00	16.00	10 10 0	H. C. Pannifex and Co., 26 Market-street, Melbourne
Animal Fertilizer	Pannifex's No. 0	..	..	..	4.16	..	4.16	..	4.50	13.00	17.50	9 15 0	" "
"	Pannifex's No. 1	..	..	..	5.50	..	5.50	..	5.00	7.00	12.00	9 18 0	" "
"	Pannifex's No. 2	..	..	..	4.80	..	4.80	..	5.00	12.00	17.00	10 8 0	" "
"	Pannifex's No. 3	..	..	..	5.50	..	5.50	..	5.00	10.00	15.00	10 10 0	" "
"	Pannifex's No. 4	..	..	..	6.00	..	6.00	..	5.00	7.00	12.00	10 10 0	" "
"	A.N.A. Surprise	..	..	..	5.00	..	5.00	..	4.00	10.00	14.00	9 10 0	George "William" Pennell, Braybrook
Bone Fertilizer	Ark	..	..	..	3.50	3.50	3.50	3.98	12.00	16.88	..	7 0 0	Arthur Murphy, Ararat
"	Elsworth's	..	..	..	3.00	3.00	3.00	4.00	9.50	15.00	..	7 10 0	W. K. Elsworth, cr. York and Joseph streets, Ballarat East
"	Balley Bros.	..	..	..	2.50	2.50	2.50	6.50	9.50	16.00	..	7 10 0	Balley Bros., 8 Sturt-street, Ballarat

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652)
FOR THE YEAR 1929—continued.

Description of Fertilizer.	Brand.	Nitrogen.					Phosphoric Acid.				Potash (Sulphate).	Price asked per ton.	Where obtainable.	
		As Nitrate.	As Ammonia.	As Blood.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.				
Containing Nitrogen, Phosphoric Acid, and Potash.														
Market Garden	Sickle	..	1.50	..	1.56	3.06	11.65	1.49	3.26	16.40	2.42	8 10 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne	
"	M.L. in diamond	..	1.50	..	1.56	3.06	11.65	1.49	3.26	16.40	2.42	8 10 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne	
"	Federal M.G.	..	1.50	..	1.56	3.06	11.65	1.49	3.26	16.40	2.42	8 10 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne	
"	Wischer and Co. Pty. Ltd.	..	1.50	..	1.56	3.06	11.65	1.49	3.26	16.40	2.42	8 10 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne	
Complete Manure No. 1..	Sickle	..	2.50	..	..	2.50	14.85	0.35	0.72	15.92	7.26	8 15 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne	
"	M.L. in diamond	..	2.50	..	..	2.50	14.85	0.35	0.72	15.92	7.26	8 15 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne	
"	Federal	..	2.50	..	..	2.50	14.85	0.35	0.72	15.92	7.26	8 15 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne	
"	Wischer and Co. Pty. Ltd.	..	2.50	..	..	2.50	14.85	0.35	0.72	15.92	7.26	8 15 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne	
Complete Manure No. 2 ..	Sickle	..	1.00	1.00	..	2.00	14.69	0.35	0.72	15.76	4.85	8 0 0	Cuming, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne	
"	M.L. in diamond	..	1.00	1.00	..	2.00	14.69	0.35	0.72	15.76	4.85	8 0 0	Mt. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne	
"	Federal	..	1.00	1.00	..	2.00	14.69	0.36	0.71	15.76	4.85	8 0 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne	
"	Wischer and Co. Pty. Ltd.	..	1.00	1.00	..	2.00	14.69	0.35	0.72	15.76	4.85	8 0 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne	

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652)
FOR THE YEAR 1929—continued.

Description of Fertilizer.	Brand.	Nitrogen.						Phosphoric Acid.				Potash (Salpate).	Price asked per ton.	Where obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Blood and Bone.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
Containing Nitrogen, Phosphoric Acid, and Potash—continued.														
Complete Manure No. 3 ..	Sickle ..	..	..	..	..	..	2'00	8'45	2'61	5'79	16'85	6'06	9 5 0	Cuning, Smith, and Co. Pty. Ltd., 65 William street, Melbourne
" ..	M.L. in diamond ..	..	..	..	..	..	2'00	8'45	2'61	5'79	16'85	6'06	9 5 0	Mc. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
" ..	Federal ..	..	..	..	..	..	2'00	8'45	2'61	5'79	16'85	6'06	9 5 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
" ..	Wischer and Co. Pty. Ltd. ..	..	..	..	..	..	2'00	8'45	2'61	5'79	16'85	6'06	9 5 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
Complete Manure No. 4 ..	Sickle ..	..	1'00	..	..	..	1'40	2'40	11'27	1'96	4'02	17'25	8 10 0	Cuning, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
" ..	M.L. in diamond ..	..	1'00	..	..	..	1'40	2'40	11'27	1'96	4'02	17'25	8 10 0	Mc. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
" ..	Federal ..	..	1'00	..	..	..	1'40	2'40	11'27	1'96	4'02	17'25	8 10 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
" ..	Wischer and Co. Pty. Ltd. ..	..	1'00	..	..	..	1'40	2'40	11'27	1'96	4'02	17'25	8 10 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne
Complete Manure, No. 5 ..	Sickle ..	..	3'33	..	..	..	..	3'33	13'67	0'34	0'67	14'68	9 5 0	Cuning, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
" ..	M.L. in diamond ..	..	3'33	..	..	..	..	3'33	13'67	0'34	0'67	14'68	9 5 0	Mc. Lyell Mining and Railway Co. Ltd., 381 Little Collins-street, Melbourne
" ..	Federal ..	..	3'33	..	..	..	..	3'33	13'67	0'34	0'67	14'68	9 5 0	Nobel (Australasia) Ltd., 380 Collins-street, Melbourne
" ..	Wischer and Co. Pty. Ltd. ..	..	3'33	..	..	..	..	3'33	13'67	0'34	0'67	14'68	9 5 0	Wischer and Co. Pty. Ltd., 499 Little Collins-street, Melbourne

LIST OF FERTILIZERS REGISTERED AT THE OFFICE OF THE DIRECTOR OF AGRICULTURE UNDER THE FERTILIZERS ACT 1915 (No. 2652)
FOR THE YEAR 1929—continued.

Description of Fertilizer.	Brand.	Nitrogen.					Phosphoric Acid.				Potash (Sulphate).	Price asked per ton.	Where Obtainable.
		As Nitrate.	As Ammonia.	As Blood.	As Bone and Flesh.	Total.	As Water Soluble.	As Citrate Soluble.	As Citrate Insoluble.	Total.			
Containing Nitrogen, Phosphoric Acid, and Potash—continued.													
Mixed Manure	Cresco	..	1.50	..	..	1.50	7.10	1.40	13.50	22.0	7.50	7 8 9	Cresco Fertilizers Ltd., North Geelong
"	Cresco No. 2	..	1.00	..	1.40	2.40	11.25	2.00	4.50	17.75	5.00	8 5 9	Cresco Fertilizers Ltd., North Geelong
Horticultural Manure	Sickle	..	3.00	..	..	3.00	10.78	0.26	0.53	11.57	9.70	9 15 0	Cuning, Smith, and Co. Pty. Ltd., 65 William-street, Melbourne
Nitro-phoska I.G.	BA over SF in circle No. 3	..	4.50	11.50	..	16.00	15.20	1.30	..	16.50	20.00	23 0 0	Dyces and Chemicals (Aust.) Ltd., 573-585 Lonsdale-street, Melbourne
"	BA over SF in circle No. 4	..	5.00	10.50	..	15.50	15.00	1.00	..	16.00	19.00	23 0 0	Dyces and Chemicals (Aust.) Ltd., 573-585 Lonsdale-street, Melbourne

* As chloride.

Description of Fertilizer.	Brand.	Nitrogen.	Phosphoric Acid.	Mechanical Condition.		Price asked per ton.	Where Obtainable.
				Fine Bone.	Coarse Bone.		
Bonedust	J. A. Dundas	4.42	21.15	35.00	65.00	9 10 0	J. A. Dundas, Dynon-road, Footscray
"	Kelpex	3.27	24.59	69.40	30.60	9 10 0	Thomas A. Mills, Spec Gully, Golden Square
"	Pannifex's No. 1	3.73	18.00	30.00	70.00	9 10 0	H. C. Pannifex, 42 Market-street, Melbourne
"	Pannifex's No. 2	4.00	20.00	20.00	80.00	9 17 6	William Abraham Rainey, Mopunga East, via Allansford
"	Pioneer	3.05	23.68	28.00	72.00	8 0 0	P. Rols Pty. Ltd., Bridge-street, Bendigo
"	Rols in circle	4.00	18.00	45.00	55.00	9 10 0	Bailey Bros., 8 Sturt-street, Ballarat
"	Bailey Bros., Mt. Clear	3.00	18.00	30.00	70.00	8 0 0	Joseph C. King and Sons Pty. Ltd., Little Pyans-street, South Geelong; and also Marshall
"	King's, Geelong	3.87	20.68	47.00	53.00	10 0 0	

Melbourne, 1st December, 1928.

P. RANKIN SCOTT, Chemist for Agriculture.

THE ELIXIR OF LIFE.

The Aryans, one of the earliest races of man, believed in the actual existence of a magical cow who produced not only milk, but also yielded healing herbs, ambrosia, and precious gems. Our ancestors 3,500 years ago thought of all good spirits in the world as cows. The Dawn was mother of the Sun, and it was her milk that nourished him. These were the "white cows," while the storm clouds were evil spirits called "red cows."

Greatest of them all was the moon-cow, giver of abundance. They could see her gold-tipped horns as the new moon came, or as the old moon passed out. The sky was a great verdant pasture. The star-cows were the five-horned cattle of the heavens. Across the sky then flowed the great stream of heavenly milk, "The Milky Way." The cow was worshipped in Babylonia and Tyre 2,000 B.C. The moon was identified as a cow in the cow-headed goddess called Hathor, with the round moon between her horns. She watched the fertility of the land. The Nile was likened to a milk cow, and the fertilizing water which it spread over the soil to the milk that sustains human life. Hathor caused the river to overflow.

David had ten cheeses in the pack of provisions he was carrying to the army just before he challenged and slew the Philistine giant, Goliath. In India to-day milk is sprinkled over the heads of the newly-married couple in blessing, and open those of mourners to soften their sorrow. The most popular method of beauty culture among the Romans was to rub the face with pieces of bread soaked in milk. Both butter and milk were used as medicines from Roman times through the Middle Ages.

In the heart of Africa, Uganda, the tribal cows are so holy that they can be milked only when the precious fluid is cared for with the most elaborate ceremonies. On the Sahara Desert people live almost entirely on the milk and milk products of their grazing herds (goats, camels, sheep). An Arab boy is as lithe and straight as the ideal athlete. Milk and its products give him the courage and the physique to meet and conquer the many hardships of his life. In Japan, where milk has been as little used as anywhere in the world, people are short in stature, and their span of life brief. Japan has recently bought dairy cattle, hoping that the Japanese of the future will grow into "great big boys." Among the hardiest races of Europe are the Scandinavians, the Alpine Swiss, and the Scotch. All three have always been users of dairy products.

Cattle did not exist in America until Columbus, on his second voyage in 1493, brought a few from Europe to the Island of San Domingo. When the Pilgrim Fathers first set foot on Plymouth Rock they brought no cows, and during the first two years paid dearly for the lack with the deaths of many young children. Later pioneers remembered the lesson. As they pushed ever westward to the new frontier the cow went with them. Oxen, sons of the cow, drew the covered wagons, and behind each wagon followed its two or three milk cows.

—From *The Path of the Gopathis*, by Zilpha Carruthers,
published by the Canadian National Dairy Council.

THE HEATING OF HONEY.

A number of recent shipments of American honey to European countries, according to reports to the United States Department of Agriculture, are alleged to have been classed as overheated. The German market in particular demands unheated honey, and a recently-enacted German law classes honey in which the diastase has been destroyed or impaired as adulterated honey and prohibits labelling overheated honey as pure honey.

The Bee Culture Laboratory of the United States Department of Agriculture has analysed several samples of honey which, because of overheating, have been returned to American exporters, and an analysis in these cases confirmed the fact that the diastase had been destroyed. However, in the cases that have come to the attention of the apicultural officials of the Department the honeys in question were not produced in the United States of America, but were shipped through the ports of this country, and for this reason perhaps the German buyers are scrutinizing carefully all shipments of honey coming from this country. Fortunately, most of the large exporters do not heat honey.

In ordinary commercial practice when extracted honey is packed in 60-lb. tins it is not necessary to heat it, as shippers are generally well aware of the fact that there is less leakage and that the honey arrives at its destination in better condition when it is in the crystallized form. Heating honey dissolves the crystals and causes it to remain in a liquid condition for a considerable length of time, depending somewhat upon the floral source of the honey.

It is not known just how important the presence of diastase is in honey. Handlers of honey are aware, however, that if honey is not carefully heated when it is necessary to prepare it for a market which requires liquid honey, or to facilitate straining, both the flavour and the colour of the honey may be impaired by the application of too much heat. It should in no case be heated to more than 140° F. This temperature, ordinarily, will not destroy the diastase, and packers for foreign markets are warned in no case to heat honey beyond this point. It is necessary also that the honey be held at this temperature for the shortest time possible.



ORCHARD AND GARDEN NOTES.

E. E. Pescott, F.L.S., Pomologist.

The Orchard.

If the work has not already been done, the orchard should be kept in constant cultivation so as to conserve the abundant spring rains. Should the summer become hot and dry, this will be a very necessary precaution. Even where the soil had been previously well cultivated, the cultivators should again be run over the surface, as any hot weather will cause the soil to crust, which would be the means of dissipating a very considerable amount of soil water. Every effort should be taken to retain this moisture so that the fruit crops shall have all they require for their perfection. To further attain this end no weeds should be allowed to grow in orchard soils.

BUDDING.

Young trees, or old trees that have been previously cut down in preparation for budding, may be worked towards the end of the month. It is advisable to select dull, cool weather for this operation, so that the sap may run more freely, and that atmospheric conditions may not have too drying an effect on the bud. The operation of budding is a very simple one, and is easily performed. To gain a successful end, the sap should be flowing freely, so that when the cuts are made the bark should "lift" or "run" easily, and without any clinging or tearing of the fibres, and it should separate freely from the wood. The bud selected should be firm and well matured, and should show no signs of premature growth whatever. It should be cut from the scion with a shallow cut, and if any wood be left in the cutting it should be taken out of the bud. A smooth, clean spot should be selected on the bark of the stock, and a T-shaped cut made, the vertical cut being longer than the horizontal one. The bark at the point where the cuts meet should be raised, and the bud inserted between the bark and the wood of the stock. The bud should be gently pressed down into position, and then bound with soft twine, string, or raffia. If the bud be too long for the cut, the top may be cut off level by means of a horizontal cut. With practice it will soon become possible to take the buds so that they will need neither cutting nor trimming.

After two or three weeks the buds should be examined to see if they have "taken"—that is, if the bud has united thoroughly to the stock. When this occurs, the tie may be cut. If a growth be desired at once all wood above the bud may be cut off some short distance above the bud, so as to prevent any bark splitting, and consequent loss of the bud, and so as to throw the bud out at a fair angle. Ultimately this should be properly trimmed.

If desired, the bud may be left dormant throughout the autumn and winter till spring. In this case the branch should not be cut off, but left on till the usual winter pruning.

SUMMER PRUNING.

Care should be observed that as much of the leafage as possible is retained on the tree. Unduly long laterals of fruiting trees may be shortened back, always cutting to a leaf. Unnecessary terminal leader growths, of which there are sometimes three or four, all strong growing, may be reduced to one, retaining this one as a leader. In no case should this growth be cut or interfered with in any way.

The results of these cuts will be to divert the sap which was flowing into growths that would subsequently be pruned, into more profitable channels, so that weak buds and growths may be strengthened, and induced into fruit bearing.

The Vegetable Garden.

The work in this section is much the same as in the flower garden. Good mulching and regular soil stirring will be the work for the month. As soon as any bed is cleared of vegetables it should be manured and well dug over in preparation for the next crop. Deep digging is always desirable in vegetable growing. If any pest, such as aphid, pea mite caterpillars, or tomato weevil, have been present, it would be advisable to burn all the crop refuse, or to destroy any insects that remain, and to give the plot a dressing of gypsum, or of Clift's manurial insecticide.

Keep the tomatoes well watered and manured, pinching out surplus and strong grown laterals. In early districts the onion crop will be ripening. In late districts, or with late crops, the ripening may be hastened by breaking down the top. An autumn crop of potatoes may be planted. Cabbage, cauliflower, lettuce, and celery plants may be planted out. Keep asparagus and rhubarb beds well watered.

The Flower Garden.

January should be a busy month in the garden. It may be necessary to water frequently, and after every watering the surface should be well loosened, and stirred with the hoe to keep it moist and cool. More cultivation and less water is a good rule to be observed. The hoe should be used more, and the hose less, in summer; greater benefits will accrue, and the water bill will be considerably reduced. Mulchings with straw, grass, &c., are very useful just now. The mowings from lawns form valuable mulching. Waste tobacco stems are also valuable as a mulch.

Dahlias, chrysanthemums, gladioli and other tall-growing, slender herbaceous plants will require support in the way of stakes. They will also need mulching considerably. These plants should receive no check whatever, and should be continued with a regular even growth right through the season. Another desideratum is that soils should be well drained, as plants of all descriptions thrive better in well-drained soils.

A sharp look-out should be kept on these plants for attacks of red spider. If this insect appears, a good spraying of tobacco solution or benzole emulsion should be given.

Constant watch will need to be kept for the various small caterpillars that attack the buds of these plants. Spraying with a weak solution of paris green and lime, or similar insecticide, will be useful. Hand-picking should also be resorted to.

Seeds of sweet pea, Iceland poppy, mignonette, wallflower, stocks and pansies should now be sown for winter flowering.

REMINDERS FOR JANUARY.

LIVE STOCK.

HORSES: *At grass.*—Supplement dry grass, if possible, with some greenstuff. Provide plenty of pure water and shade shelter. *In stable.*—Supplement hard feed with some greenstuff, carrots, or the like, and give a bran mash once a week at least. Avoid over-stimulating foods, such as maize and barley. Give hard feed in quantities only consistent with work to be performed. Stable should be well ventilated, and kept clean. When at work, give water at short intervals. Always water before feeding. Great benefit will result in supplying horses—more especially young ones running at grass—with a lick. The following one is recommended:—

Salt	..	..	..	..	..	20 parts
Lime	..	..	..	..	..	20 parts
Superphosphate	..	..	..	..	..	10 parts
Sulphate of iron	..	..	..	..	..	5 parts.

By having troughs constructed that will protect the lick from rain a considerable saving will be made.

Horses at grass require their feet attended to at frequent intervals, otherwise deformity of feet and lameness may result.

CATTLE.—Provide succulent feed and plenty of clean water easy of access; also shade and salt lick in trough. Have each cow's milk weighed and tested for butter fat regularly. Rear heifer calves from those that show profitable results. Give milk at blood heat to calves. Keep utensils clean or diarrhoea will result. Do not give too much at a meal for the same reason. Give half-a-cup of limewater per calf per day in the milk. Let them have a good grass run or lucerne, or half-a-pound of crushed oats in a trough. Dehorn all dairy calves except those required for stud or show purposes. Keep bulls away from cows. Write for Bulletin 52.

PIGS.—Sows about to farrow should be supplied with short bedding in well-ventilated styes. All pigs should be provided with shade and water to wallow in. There will be plenty of cheap feed available now, and there is a good margin between cost of feed and price for fat pigs. Read Bulletin No. 16.

SHEEP.—Ewes with a predominance of British blood do not come regularly into season until the present month. This is particularly the case in Gippsland and South-western Victoria, if these strong-woolled ewes were bred in the cool wet districts. Most of the pure-bred ewes of British origin very seldom take the ram until February, March, or even as late as April, with the possible exception of studs bred in the north, or recently imported.

Lamb's dropped in July, August and September may suit certain districts in the south, but early lambs are most profitable in normal years north of the Divide. To breed out this late-lambing tendency, and to procure quality and quantity of wool as well as a good framed sheep, use well-bred and well-woolled

large-framed Merino rams on all strong-woolled cross-bred ewes. If the right type of Merino ram is not obtainable at reasonable rates, secure good Corriedales from registered owners. Narrow hard-looking rams are usually active workers, and in a flock of ewes with other rams, they often get the greatest number of lambs. If any such rams are of necessity to be used, keep them back for a few weeks, and join later with the flock after the best of the rams have been running with the ewes for at least three weeks.

The second dipping of sheep affected with tick or louse can be undertaken this month. A good water supply is vital. Provision should be made for prevention against fire and losses by disease or drought, also blow-fly pest.

Great care should be taken in regard to blow-fly pest. If at all troublesome fly-traps should be set; a pamphlet giving information regarding the construction of traps is obtainable from the Department of Agriculture.

POULTRY.—Chickens should now be trained to perch; they will be more healthy.

Provide plenty of green feed and give less grain and meat. Avoid condiments. Keep water in cool shady spot and renew three times each day. Keep dust bath damp.

CULTIVATION.

FARM.—See that haystacks are weatherproof. Summer fallow and prepare land for winter fodder crops. Get tobacco sheds ready for crop. In districts where February rains are good, sow rye, barley, vetches, and oats for early winter feed.

ORCHARD.—Spray for codlin moth. Search out and destroy all larvæ. Cultivate the surface where necessary and irrigate where necessary, paying particular attention to young trees. Fumigate evergreen trees for scale. Continue budding.

FLOWER GARDEN.—Cultivate the surface and water thoroughly during hot weather. Summer-prune roses by thinning out the weak wood and cutting back lightly the strong shoots. Thin out and disbud dahlias and chrysanthemums. Layer carnations. Plant a few bulbs for early blooms. Sow seeds of perennial and hardy annual plants.

VEGETABLE GARDEN.—Continue to plant out seedlings from the seed-beds. Sow seeds of cabbage, lettuce, cauliflower, peas, turnips, and French beans. Keep all vacant plots well dug.

VINEYARD.—February is the best month for the "yema," or summer bud graft (see *Bulletin* No. 35, available on application). Select and mark the best-bearing vines of varieties from which scions will be required for next spring's grafting.

Given suitable climatic conditions, downy mildew will make its appearance. If vines were not sprayed in January they should be sprayed this month. The final spray (January or February) is most important for the protection of the foliage, thus insuring the ripening of the fruit and well-nourished wood, without which a good crop cannot be expected next year. Sulphur again, if oidium is prevalent, but avoid sulphuring wine grapes too short a time before gathering. The sulphur may be mixed with Bordeaux mixture, thus enabling the two diseases, oidium and downy mildew, to be combated simultaneously.

Cellars.—Prepare all plant and casks for the coming vintage. An ounce of bisulphite of potash, or a couple of fluid ounces of bisulphite of soda solution, to each bucket of water used to swell press platforms, tubs, &c., will help to keep it sweet. Keep cellars as cool as possible. Complete all manipulations so as to avoid handling older wines during vintage.

In the case of very hot weather occurring during vintage, attention is directed to the new wine-making method by "Preliminary Maceration," described in a pamphlet obtainable on application.

BACON PRODUCTION IN RUSSIA.

Russian bacon production, which was almost at a standstill during the years following the Russian civil war, is now being developed at a rapid rate, according to the *Economic Review of the Soviet Union*, published by the Amtorg Trading Corporation, 15th September, 1928. This development is of particular importance for the Soviet Union as bacon is the principal item in the list of Soviet meat exports. The number of pigs handled at the bacon factories during the first quarter of the season, October-September, 1927-28, reached 176,000 against 228,000 handled during the whole season 1926-27. From 1924-25 to 1926-27 the number handled in bacon factories increased almost seven-fold.

However, the production in 1926-27 was still only 42 per cent. of the capacity of the factories. By next year it is expected that the capacity of Soviet bacon factories will be about 700,000 pigs and that production will amount to 70 per cent. of the total capacity, or approximately 500,000 pigs, which will yield 60,000,000 lb. of bacon. Within the next three years eight more factories are planned, which are to be located in the Urals, North Caucasus, Siberia, and in the cities of Kursk and Viatka.

The Miaesco Gostorg (State meat marketing organization) is engaged in a campaign of spreading information among the peasants as to the correct methods of breeding swine. Hundreds of peasant co-operatives for this purpose have been formed in various sections of the country, especially in North Caucasus.

The number of pigs in the country in 1927 is variously estimated to be from 20,000,000 to 22,000,000 compared with about the same number in 1916. The growth in bacon production in the past two years has been due to a great extent to increased prices for procurements, which have stimulated production in those districts where the breeding of pigs for bacon was, with low prices, less profitable than breeding them for direct shipments to the markets of Moscow and Leningrad.

Exports of bacon, almost exclusively to the British market, reached 16,634,000 lb. in 1926-27, or 99 per cent. of the average for 1908-13, while bacon and pork exports together reached 17,322,000 lb. in 1926-27, or 71 per cent. of the pre-war average. In the two preceding seasons bacon exports were as follows:—3,849,000 lb. in 1924-25, and 6,263,000 lb. in 1925-26. Russian bacon exports to the United Kingdom, while increasing, are still far below the imports into the market from the other principal sources of supply.





SOMNER'S

TIPTOP SEEDS

A Great
Winter Fodder

BERSEEM CLOVER

Valuable for its green or dried fodder, and as a winter soiling crop for orchards, vineyards, &c., on irrigated land.

A strong-growing annual, with succulent fleshy stems and broad, soft leaves. The flowers are cream or pale yellow in colour and are clustered together in a compact, cylindrical spike.

The first cut is available from 45 to 65 days after sowing, followed by a second and third cut and sometimes a fourth, although the latter is never heavy and is usually reserved for seed.

All kinds of stock eat it readily, and it may be given to them at any stage of growth; it does not taint milk in the slightest degree.

This Clover will re-seed itself in a pasture on good land and thus become practically permanent. Sow 8 to 12 lb. per acre in drills, or 20 to 30 lb. broadcast.

"Misskawi" Brand, Specially Re-machine-cleaned Seed, 1/3 lb., 120/- cwt.

Sow TURNIPS and SWEDES Now

TURNIPS

Purple Top Yellow Aberdeen, Green Top Yellow Aberdeen (both Yellow-fleshed varieties), each 2/- lb.

Mammoth Purple Top White (White-fleshed), 2/- lb.

SWEDES

Elephant, Skirving's Purple Top, Champion Purple Top (Purple-top varieties), each 2/- lb.

Ne Plus Ultra, 2/6 lb.; Kangaroo (Bronze-top varieties), 2/- lb.

(Sow 3 lb. of Seed per acre.)

RAPE

(Sow 4 to 6 lb. per acre in drills; 8 to 12 lb. broadcast)

Somner's "Tip-Top" True Giant Kangaroo Rape (We are the original introducers)—10d. lb.; 34/- cwt.

Dwarf Essex—Imported English (true) 8d. lb.; 65/4 cwt.; Imported Dutch, 7d. lb.; 60/- cwt.; New Zealand, 7d. lb.; 60/- cwt.

White Mustard—Sow with Rape at the rate of 1 to 2 lb. per acre, as it prevents blowing. 1/6 lb.; 150/- cwt.

Sheep's Parsley—2/6 lb.

LAW, SOMNER Pty. Ltd.

Established over 79 Years

Seed Merchants and Nurserymen
Block Place & Swanston St., Melbourne, C.1

The leading Agricultural Seed House in Victoria

THE "KEROTIN" Spray Pump



For Small Orchards
AND THE
Flower Garden

THROUGHOUT AUSTRALIA

the "Kerotin" Spray Pump has won favour for use in Small Orchards and the Flower Garden. It is a handy little pump for keeping the many garden pests in check. It is made of brass throughout and fitted with a strong Iron Foot.

THE "KEROTIN"

is also useful for applying lime wash, spraying disinfectants in fowl runs, cattle sheds, &c., and for washing windows, buggy or car. Besides being an efficient

SPRAY PUMP

when fitted with a Special Nozzle, the "Kerotin" becomes a most reliable Veterinary Pump for Breeders of Cattle, &c.

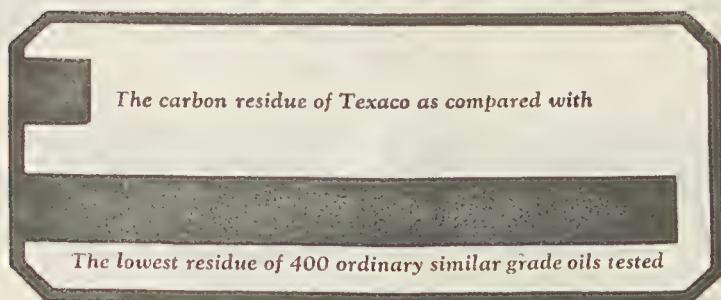
Prices—With Ordinary Spray Nozzle	..	..	21s. 6d.
With Graduating Nozzle	..	..	22s. 6d.
Special Nozzle	..	..	7s. 6d. extra

JOHN DANKS & SONS Pty. Ltd.

391-403 Bourke Street - - Melbourne

324-330 Pitt Street - - - Sydney

Makers of Windmills, Pumps, Troughing, &c.



A recent accurate and authoritative test of 400 well-known Motor Oils proved that TEXACO has a carbon residue less than one-tenth that of the lowest analysed.

The Carbon residue of Texaco is less than one-tenth that of ordinary Motor Oil

Here is a statement, the truth of which you can verify yourself or see demonstrated at any Office of the Texas Company, there is one in every State. Watch the oil in your own car tested by the hot plate method. Just a metal plate heated to about 800 degrees Fahrenheit, then a drop of oil allowed to fall on the plate. The oil is at once burned away leaving—if it is ordinary oil a black blot of carbon, but if its Texaco—a mere smudge on the polished surface. Could anything be more convincing!

TEXACO

CLEAN-CLEAR-GOLDEN

MOTOR OIL

5.FP.28



DEPARTMENT OF AGRICULTURE

GOVERNMENT COOL STORES

VICTORIA DOCK

The Stores have a capacity of 743,980 cubic feet insulated, and are capable of holding 372,000 boxes of butter, or 248,000 cases of fruit, or 335,000 carcasses of lamb and mutton.

Electric motor power totals 900 H.P.

Produce can be placed on conveyors at any point and mechanically carried to any chamber in the building, or conveyed from the chambers direct into the ship's hold.

The Railway Department Goods Sheds

are adjacent to and connected with the Cool Stores by direct lines; delay and exposure of produce through shunting in the Spencer-street yards, or cartage, are thus avoided. The Stores are situated in close proximity to the Victoria Dock, where vessels drawing up to 30 feet of water can be berthed; excellent facilities for the efficient and economical treatment and shipment of frozen and perishable products are provided.

Expert Officers are connected with every Branch, so that any one requiring information regarding the production, preparation, and shipment of produce can rely upon being promptly supplied with up-to-date information upon all matters.

DEPARTMENT OF AGRICULTURE

GOVERNMENT COOL STORES

VICTORIA DOCK

Facilities are provided for producers and smaller exporters of the various kinds of produce, so that direct shipments on their own account may be undertaken. The Government ownership and conduct of Cool Stores places producers in an independent position, and, in addition, preserves an open channel for the carrying on of the export trade in perishable products.

The Department of Agriculture will receive, handle, freeze, store, and ship Butter, Cheese, Eggs, Fruit, Meat, Poultry, Rabbits and Hares, &c., for producers and exporters.

Produce to the value of over £30,000,000 has been treated at the Government Cool Stores.

GOVERNMENT COOL STORES, VICTORIA DOCK (Dudley St.)

Telephones:

Office : 10383 Central.

Superintendent and Engineer-in-Charge : 10382 Central.

SCALE OF CHARGES, ETC.

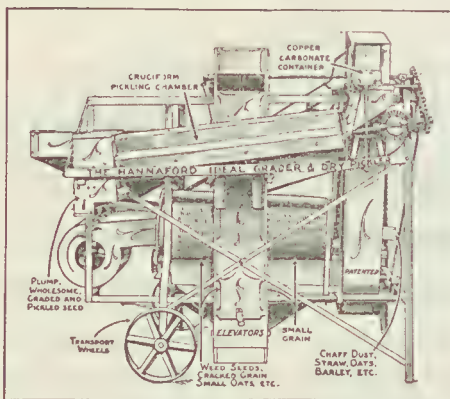
and further particulars may be obtained upon application to the

EXPORTS SUPERINTENDENT, DEPARTMENT OF AGRICULTURE,
PRODUCE OFFICES, 605-7 FLINDERS STREET, MELBOURNE.

Telephone, 9380 Central.

HANNAFORD

Wheat Grading and Pickling Machinery



SEED graded so that only the plumpest grains are selected for seed, and the waste of sowing cracked and shrivelled grains avoided.

HANNAFORD machines are of superior design and give an unequalled performance.

THE most extensive and efficient range of Wheat Grading and Pickling Machinery for farmers' and contractors' use in the Commonwealth.

ALF. HANNAFORD & CO. LTD.
WOODVILLE, SOUTH AUSTRALIA

This Journal

offers exceptional advantages

for Advertising

Circulates throughout the Country Districts of Victoria and amongst Farmers of the Commonwealth, reaching also country professional men, tradesmen, schoolmasters, teachers, and the like.

Exceptionally satisfactory results have followed the advertising of Stud Stock in this Journal.

Rates on application to the Official Canvasser

Mrs. Hemming, "1 Cobham," Ruskin St., Elwood, S.3

THE STATE SAVINGS BANK OF VICTORIA

"The People's Bank"

LOANS TO FARMERS

In sums from £50 to £3,000 up to three-fourths
of valuation.

INTEREST: Loans not exceeding £1,000, 6 per cent.,
repayable by instalments over 30 years; Loans
exceeding £1,000, 6½ per cent., repayable by instalments over 31½ years

SPECIAL TERMS TO RETURNED SOLDIERS

No Charge for Mortgage Deed

*For particulars, call on your local Branch Manager
or write direct to Head Office.*

Head Office:

139-153 Elizabeth Street,
Melbourne.

GEO. E. EMERY,

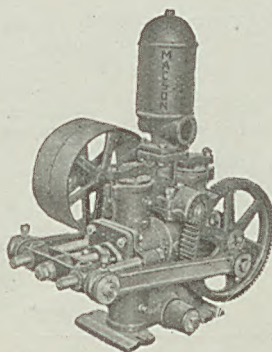
General Manager.

Pumps for every Purpose—

HAND or POWER

Modern Farming methods demand modern appliances. We have spent a great deal of time and money in perfecting various types of Pumps, and can thoroughly recommend every one shown in our Catalogue.

The Pump illustrated is the famous "MACSON" PISTON PUMP, which is made in our own works. Prices range from £20 upwards. It can be driven by a 2-horse Power Engine and has a capacity of 850 gallons per minute.



Larger sizes in stock.

Every type of Pump for Farm, Home, or Station use is shown in our New Illustrated and Priced Pump Catalogue, which will be sent post free on request.

McPherson's
Proprietary Limited

582-592 Collins Street
MELBOURNE

CABBAGES and CAULIFLOWERS

For Early Market Sowing

THE "PHENOMENAL" CAULIFLOWERS



The following from Nudgee, Queensland, is typical of what hundreds of customers have told us about their Phenomenal Cauliflower Crops:—

"I consider Phenomenal Cauliflowers stand on their own as regards flowers. I had some Maincrop last year weighing 22 lbs and never saw flowers in my life like them, and I got 5/- each for them when Cauliflowers were fairly plentiful. That was just about a record for the market."

YATES' PHENOMENAL EARLY—A very fine early variety, maturing in about four months. Heads are of good size, close grain, and a splendid colour.

YATES' PHENOMENAL MAINCROP—A magnificent maincrop sort, which is rapidly becoming the standard market variety in Australia. Matures in about six months, producing very large, white heads of splendid texture.

MARKET STRAINS OF CABBAGE

SUCCESION, PETER HENDERSON'S GROWN STOCK—This is a magnificent strain of Succession, beautifully even and regular, and is imported direct from Peter Henderson, New York, the originator of this variety.

YATES' DERWENT RE-SELECTED EARLY DRUMHEAD—A selected stock, grown on our Seed Farm, Derwentside (Tasmania). It is produced with great care and has given satisfaction throughout Australia.

YATES' VANGUARD—A fine early market variety, producing a splendid quality short-stemmed Cabbage, very solid round heads.

YATES' UTILITY—Similar to Yates' Vanguard, but a little later and a little larger than that variety.

All the above are priced in YATES' BULK PRICE LIST OF VEGETABLE SEEDS FOR MARKET GARDENERS. Doubtless, many of the other lines mentioned therein will interest you also—send for it NOW!

All quotations submitted and all orders accepted are subject to our printed conditions of sale

ARTHUR YATES & CO. LTD.

Australia's Greatest Seed House

Warehouse:
184-6 SUSSEX STREET

P.O. Box 2707-C

SYDNEY

LET
"THE FLIER"

take you for a HOLIDAY to
VICTORIA'S AZURE COAST

LORNE
ANGLESEA
BARWON HEADS
CLIFTON SPRINGS
TORQUAY
OCEAN GROVE
APOLLO BAY
PORTLAND
PETERBOROUGH
PORT CAMPBELL
PORT FAIRY
WARRNAMBOOL

Consult HOLIDAY EXPERTS at the

GOVERNMENT TOURIST BUREAU

QUEEN'S WALK (Opp. Town Hall), MELBOURNE

Telephone Central 2898.

5P
63012
1645